MARCH 1954

The Paper Industry

Nalco #71
PAPER MILL
ANTIFOAM
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3/17/54
M.M.
CONTROLS foam and bubble formation over wide pH range—4.0 to 9.8!
ELIMINATES bubble formation on wires.
EASY to mix and feed.
NO EFFECT on other materials in the furnish.
ECONOMICAL—Average cost less than 15¢ PER TON of paper produced.

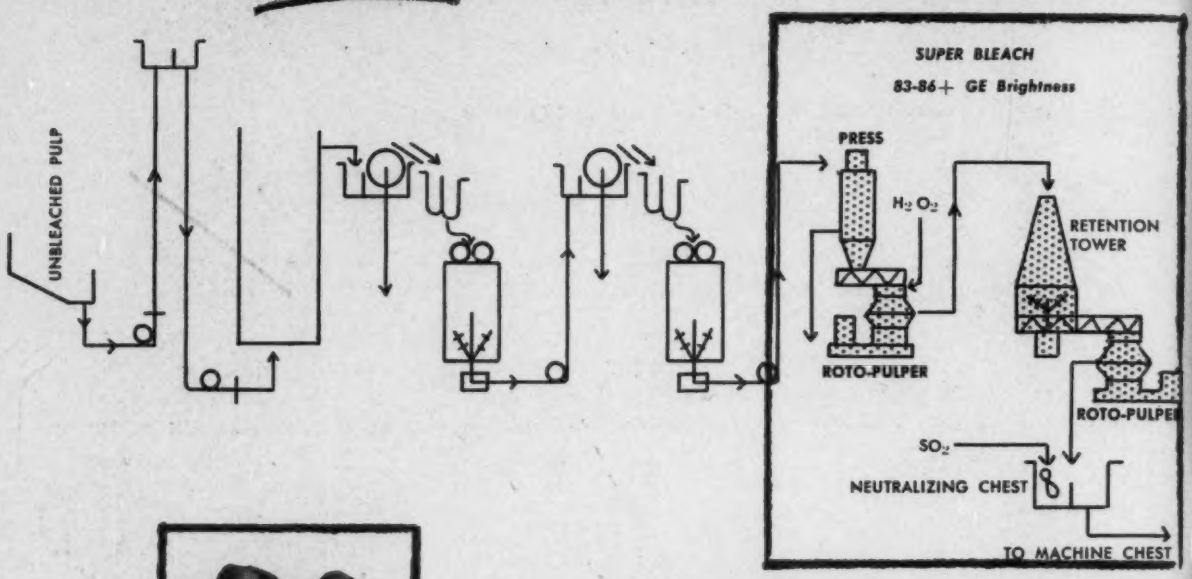
NALCO 71 not only positively eliminates foam and bubble formation in paper machine systems without affecting the furnish, but it also *stays in the water.* This means that remarkably small dosages of 71 efficiently prevent foam overflows, wadding, uneven caliper and other foam difficulties. Churning of Jordans, action of stock pumps and the flow of stock—the very things that cause foaming in untreated systems—all promote better action of Nalco 71!

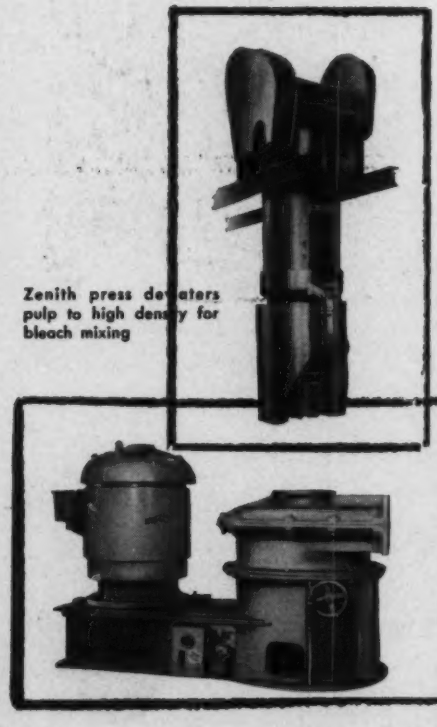
Complete information on Nalco 71—and on other Nalco Chemicals for paper manufacturing use will be furnished upon request. Write today for prompt action on a permanent solution for your foaming problems.

NATIONAL ALUMINATE CORPORATION
6232 West 66th Place
Chicago 38, Illinois
Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario, Canada

THE Nalco SYSTEM
Serving the Paper Industry through Practical Applied Science

GET HIGHER BRIGHTNESS





Zenith press dewaters pulp to high density for bleach mixing

015 Roto-Pulper serves as bleach mixer, second Roto-Pulper as a denodulizer.

through SUPER bleaching!

A PREMIUM PULP . . . GREATER PROFITS . . . PLUS THESE ADVANTAGES: ECONOMICAL—lower chemical, steam and power costs. LOW CAPITAL COST—only one extra stage of high density required. SAFE—no damage to pulp physicals . . . yield retained . . . no reversion.

From a semi-bleached pulp with a brightness of 71-73 GE, most pulps can be readily superbleached to 83-85 GE with one extra stage (above) using peroxide at high density. Under favorable conditions brightnesses approaching 90 GE can be obtained.

Advantages of high density bleaching and some of the inherent problems, including difficulty of introducing and distributing bleach at a uniform rate and eliminating nodules or "knots", have long been recognized. *(See "Manufacture of Pulp and Paper", pp 855-6, para. 28 and p 878, para. 51.)*

Now both of these obstacles have been removed with development of the Jackson & Church Roto-Pulper. Three years' plant experience proves conclusively that Roto-pulpers successfully mix bleach in desired quantities on a continuous basis and remove troublesome nodules.

With these problems solved, the industry now can take full advantage of high density bleaching and its inherent features.

Our engineers are ready to assist with your paper and pulp processing problems. Write to Zenith Division, Dept. PI.

J-C **JACKSON & CHURCH CO.** SAGINAW, MICHIGAN

Work well done since eighty-one

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Corrosive Valve Services?

try this combination of economy and corrosion-resistance

LUNKENHEIMER "CAUSUL" METAL

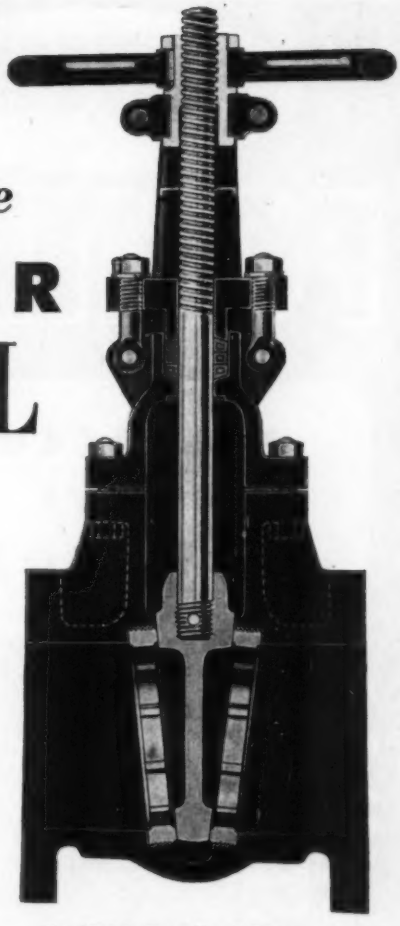


Fig. 1639-8—Gate Monel Trim

Fig. 1847-4—Gate 18-8 Mo Stainless Steel Trim

200 lb. W.O.G.

In corrosive valve applications, trim is a most important factor. If you can get *maximum* corrosion resistance in the trim, combined with *useful* corrosion resistance in a less expensive body, you can save money in most services.

That is exactly the combination you get in "Causul" Metal Valves. Trim is available in either Type 316 Stainless Steel or Monel Metal — providing the best corrosion resistance you can buy. "Causul" Metal bodies and bonnets are less expensive than all-Monel or all-Stainless and *have been used successfully for more than 20 years* in a wide variety of services. They are much more resistant to corrosion than iron valves . . . much tougher, too. And the problems of electrolytic corrosion between seating and body materials do not exist in "Causul" Metal Valves.

"Causul" Metal is an exclusive Lunkenheimer development. Ask your Lunkenheimer Distributor for more details, or write for Circular 592 to The Lunkenheimer Co., Box 360 S, Cincinnati 14, Ohio.

TYPICAL APPLICATIONS

OIL REFINERIES — Sludge and recovery acids, wash liquors, sour crudes, sulphuric acid, caustics, and certain distillates.

COKE AND BY-PRODUCTS — Certain acid and ammoniacal liquors, distillates, agitator service, sulphuric acids and caustics.

WATER TREATMENT — Various water treating solutions, such as soda ash and sodium aluminate. To handle sea water.

PAPER—(Sulfate, Kraft and Soda Processes) — black, green and white liquors.

SUGAR—Raw sugar juice lines.

TEXTILE and rayon processing.

FERTILIZER manufacturing.

CAUSTIC solutions, processing.

Fig. 1708-8—Gate Monel Trim

Fig. 1845-4—Gate 18-8 Mo Stainless Steel Trim

225 lb. W.O.G. Screwed

Fig. 1709-8—Gate Monel Trim

Fig. 1846-4—Gate 18-8 Mo Stainless Steel Trim

175 lb. W.O.G. Flanged

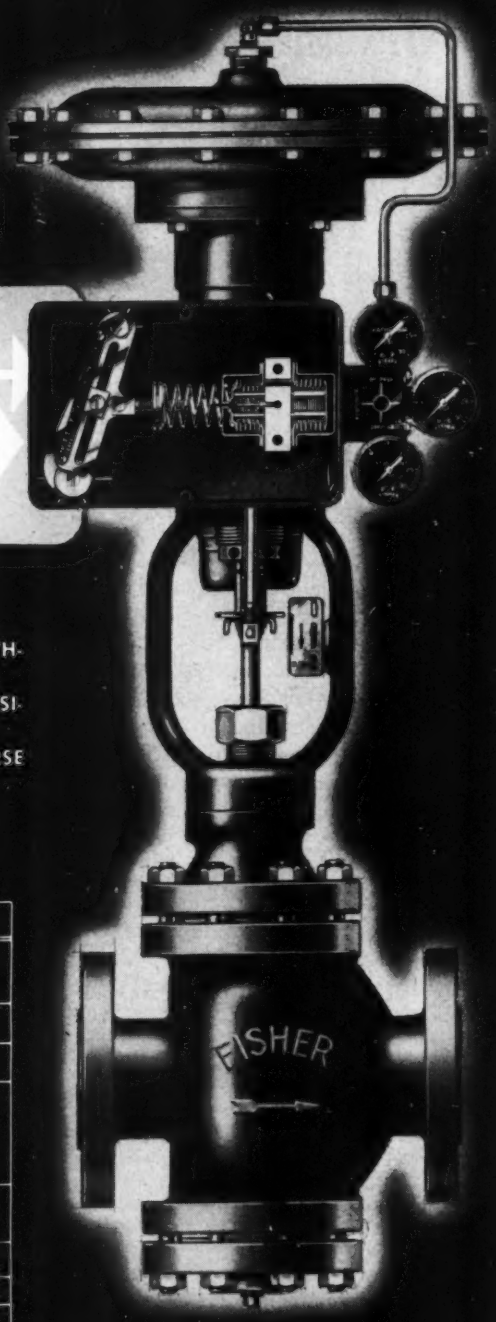
LUNKENHEIMER®

THE ONE *Great* NAME IN VALVES

L-453-15

FISHER® POSITROL®

FOR ACCURATE POSITIVE VALVE POSITIONING



FEATURES

- COMPACT — SIMPLE RUGGED
- 5 YEARS FIELD SERVICE
- EASILY ADJUSTABLE
- FORCE BALANCE TYPE OF POSITIONER
- AVAILABLE WITH OR WITHOUT BY-PASS
- USABLE AS REMOTE POSITION INDICATOR
- FOR DIRECT OR REVERSE ACTION VALVES

TECHNICAL DATA

TEST			FISHER TYPE 3500
INSTRUMENT PRESSURE SENSITIVITY CONTROLLING PRESSURE CHANGE NEEDED TO PRODUCE 2 LBS. TO 15 LBS. TO DIAPHRAGM			0.07 LB
STEM MOVEMENT SENSITIVITY AMOUNT STEM CHANGE TO PRODUCE 2 LBS. TO 15 LBS. TO DIAPHRAGM	½" TRAVEL		0.0037" AVE.
	2" TRAVEL		0.015" AVE.
SPEED TIME IN SECONDS FOR FULL TRAVEL	SIZE	TRAVEL	
	DD	¾"	1.2 — 1.2 SEC.
	FF	1½"	4.2 TO 4.8 SEC.
	GG	2"	7.2 SPC TO 9.6 SEC.
	HH	2"	10.5 TO 12.6 SEC.
LAG ERROR IN POSITION AT 9 LBS. CONTROLLER PRESSURE	½" TRAVEL		0.0006" AVE.
	2" TRAVEL		0.001" AVE.
EFFECT OF VARIATIONS IN AIR SUPPLY PRESSURE	½" TRAVEL		0.1 LB. PER 5 LB. CHANGE
	2" TRAVEL		0.1 LB. PER 5 LB. CHANGE
CHARACTERISTICS CONTROLLED P. VS. DIAPHRAGM P.			LINEAR
COMMENTS			STABLE ADJUSTMENTS ALL EASY AND SIMPLE
AIR CONSUMPTION NORMAL 9 LBS. DIAPHRAGM PRESSURE			15.0 CU FT/HR

FOR COMPLETE DETAILS WRITE FOR BULLETIN E-3500.

FISHER
GOVERNOR COMPANY
Marshalltown, Iowa

LEADS THE INDUSTRY IN RESEARCH FOR BETTER PRESSURE CONTROL

Since 1880

The Paper Industry

Technology • Engineering • Management • Production

VOLUME 35 • NUMBER 12 • MARCH 1954

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BOSTON 16: **Meade & Company,** 471 Statler Building, Liberty 2-9677.

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NEW YORK 20: **L. S. van Nydeck,** 9 Rockefeller Plaza, Circle 7-3085.

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PORTLAND: **Murray Bothwell,** 234 East Colorado St., Pasadena, Calif., Ryan 1-9155.

SAN FRANCISCO: **Murray Bothwell,** 234 East Colorado St., Pasadena, Calif., Ryan 1-9155.

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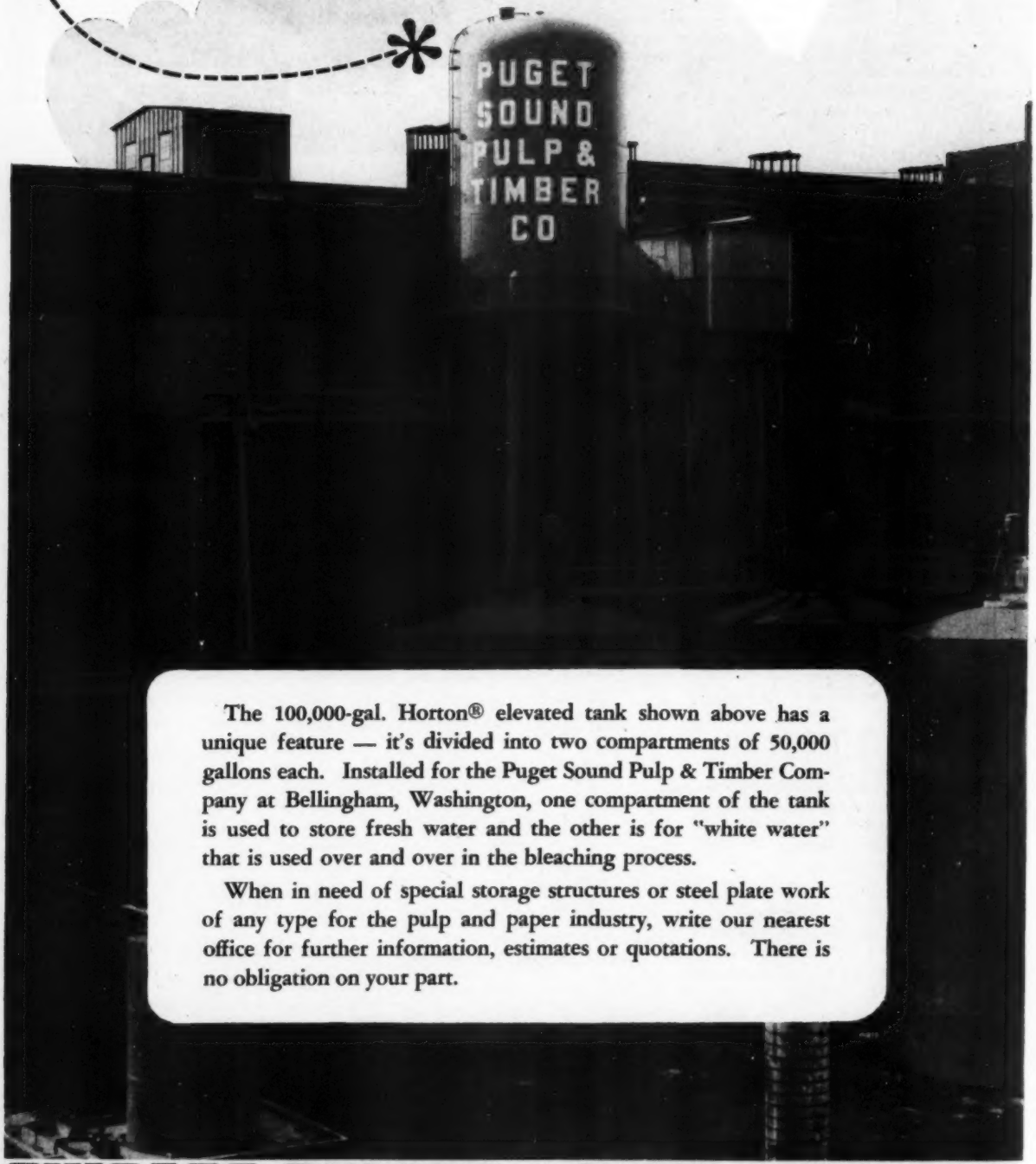
Two Compartment Horton Elevated Tank

stores fresh water and white water



The 100,000-gal. Horton® elevated tank shown above has a unique feature — it's divided into two compartments of 50,000 gallons each. Installed for the Puget Sound Pulp & Timber Company at Bellingham, Washington, one compartment of the tank is used to store fresh water and the other is for "white water" that is used over and over in the bleaching process.

When in need of special storage structures or steel plate work of any type for the pulp and paper industry, write our nearest office for further information, estimates or quotations. There is no obligation on your part.

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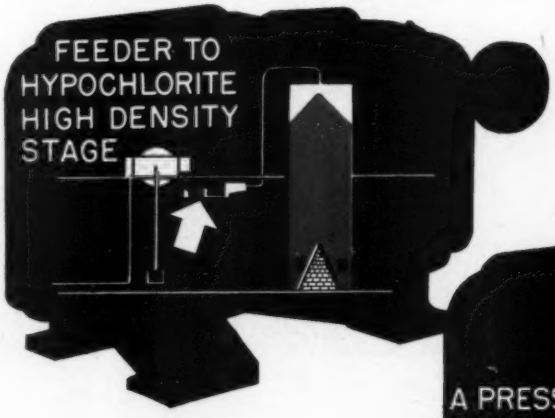
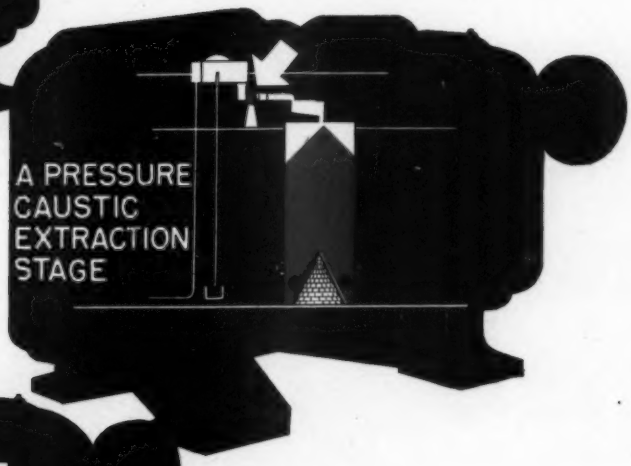
In Canada: HORTON STEEL WORKS LIMITED, FORT ERIE, ONT.

THICK STOCK PUMP



PUMPING 10%-17% PULP



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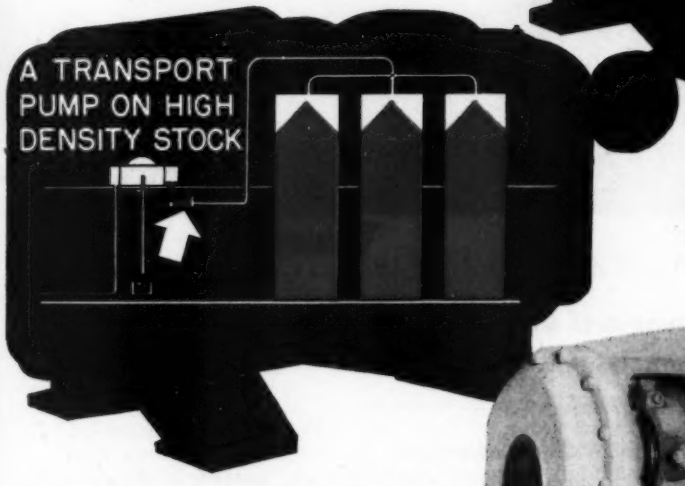
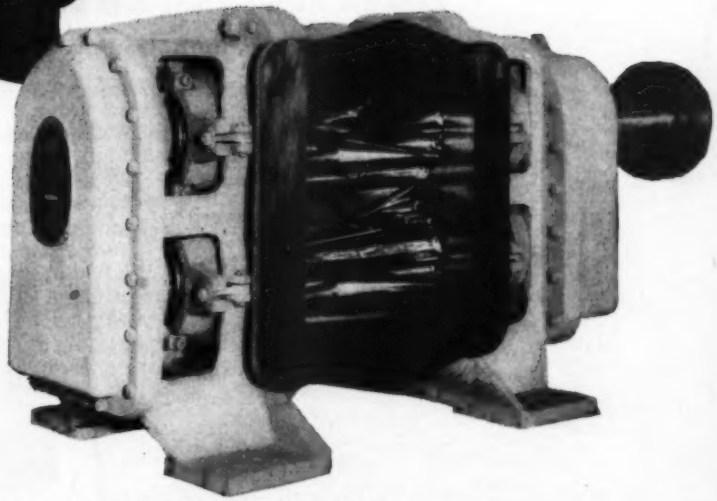


SERIES - 300*
SERIES - 500*



This unit is a positive displacement type pump specifically designed to handle pulps at high densities. The conical profile of its synchronous rotors permits the pumping of stock at densities above 10% A.D. —with lowest horsepower per ton —and no fibre damage. Truly the modern way to handle all types of pulp.

***Tons per day**

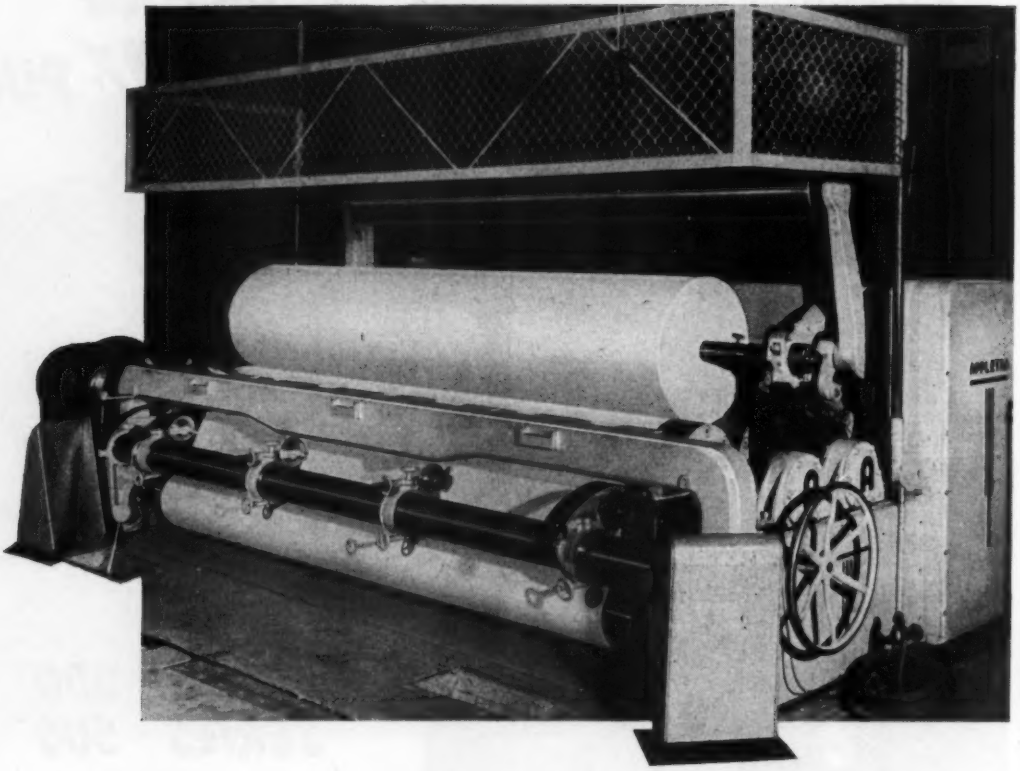
IMPROVED MACHINERY INC.

J-35

NASHUA, NEW HAMPSHIRE

Sherbrooke Machineries Limited manufacture similar equipment in Canada

for over 70 years...



. . . Appleton Machines have been anticipating and filling the needs of the Nation's leading paper makers. Above photograph, taken at the famed Blandin Mills, shows installation of an Appleton 150", 2 drum rewinder. Combining efficiency with stability and proven principles of pioneer design has long been our standard operating procedure.

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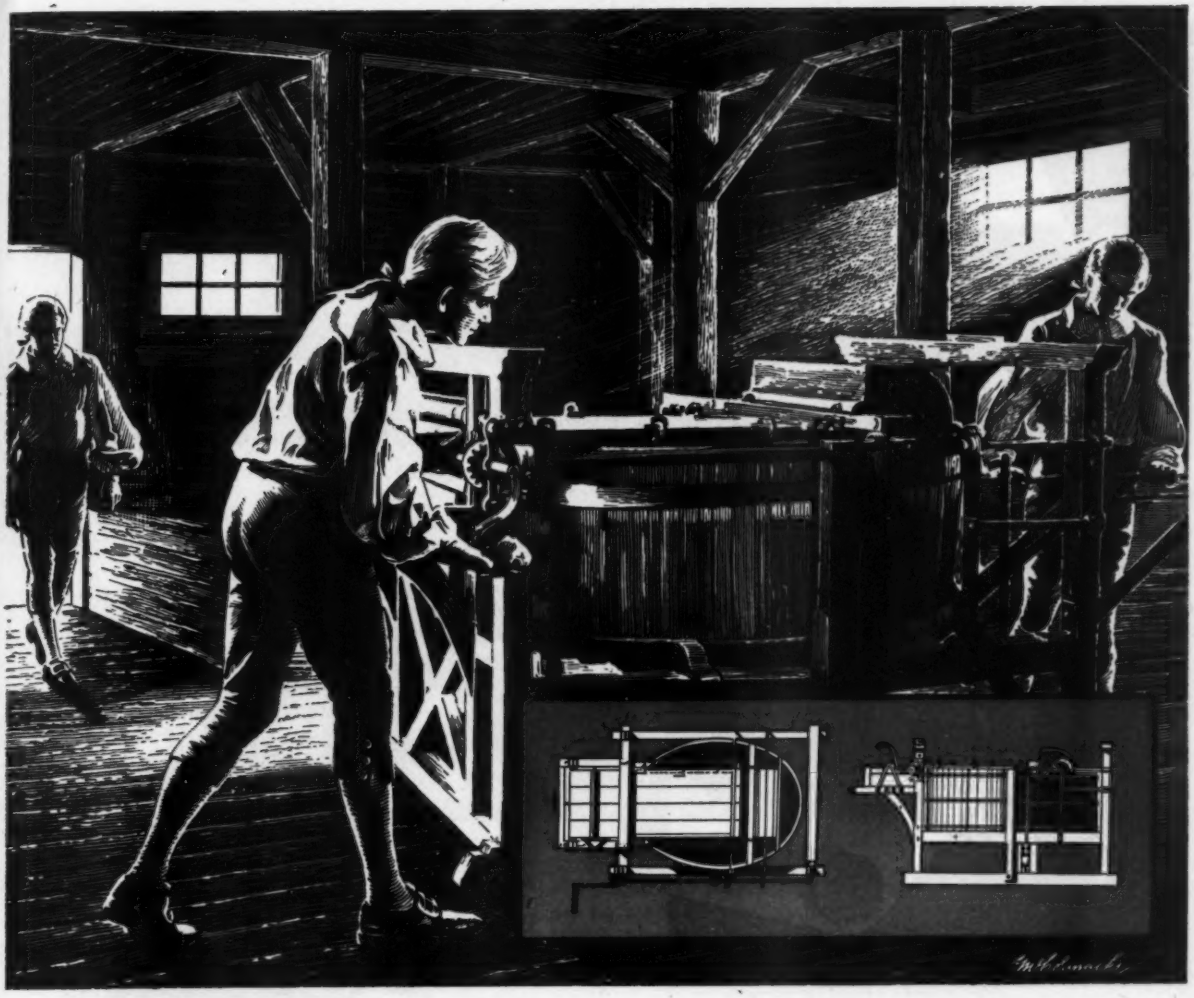

Papermaking Went Into High Gear With This Machine in 1798...

An important event in the history of papermaking was Nicholas-Louis Robert's invention of the paper machine over a century and a half ago. No longer would the slow methods of forming paper by hand limit size and quantity of paper sheets. Robert's machine formed paper of continuous length upon an endless woven-wire cloth which retained the matted fibers. Today more complex machines, operating on the same principle, produce a tremendous volume of paper. Helping maintain its quality are high-grade raw materials produced by A. E. Staley Manufacturing Company, supplier to leading mills for more than 30 years. Discover the many advantages Staley can offer *you*. See your supplier or write for details today.

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A full range of starches and dextrins for beater, surface and calender sizing.

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Corrugating starches, special laminating and bag adhesives.

Staley Coating Adhesives
Starches and Dextrins give better results for machine or regular brush coating.

Staley Plasticizers
"Sweetose"® and Staley's corn syrup are ideal softening agents for glassine paper.

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Staley's

A. E. Staley Mfg. Company, Decatur, Ill.

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MORE USE PER DOLLAR

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Manhattan Rubber Covered Rolls assure you of high-speed, uniform production. They won't crack, harden, corrugate or oxidize. An exclusive Manhattan process provides an inseparable bond of rubber to metal . . . eliminates separation of rubber cover from the metal core and reduces loss due to downtime.

Custom-made to your specifications, Manhattan Rubber Covered Rolls give you permanent density and long, trouble-free service . . . "More Use Per Dollar" under all working conditions. Call an R/M roll covering specialist to discuss your requirements.

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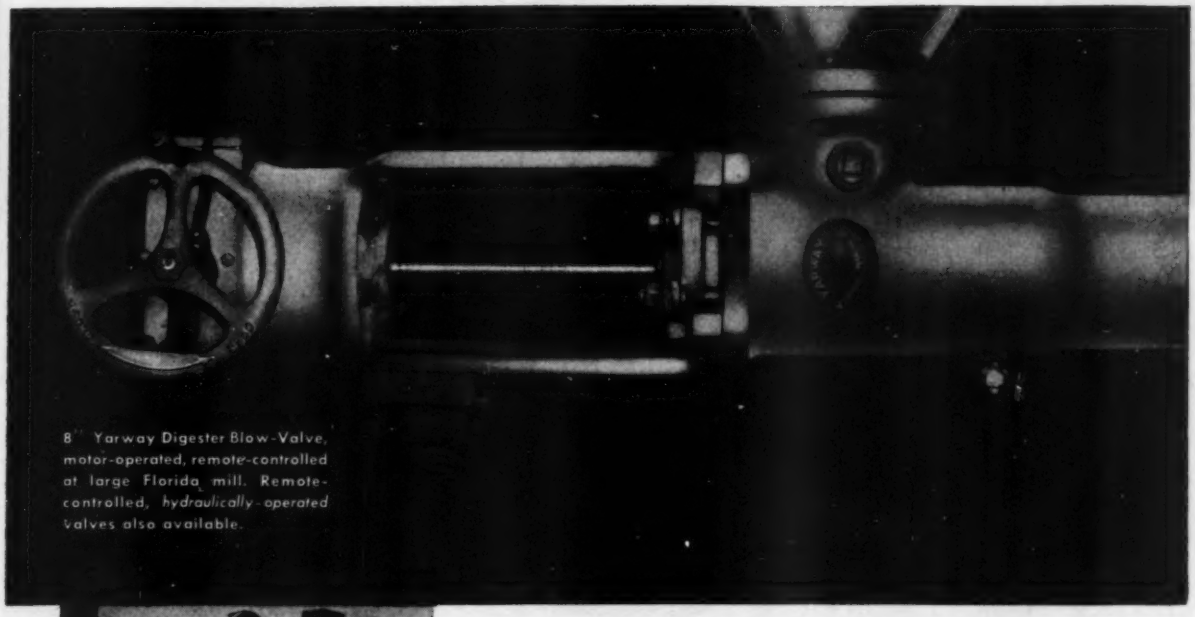
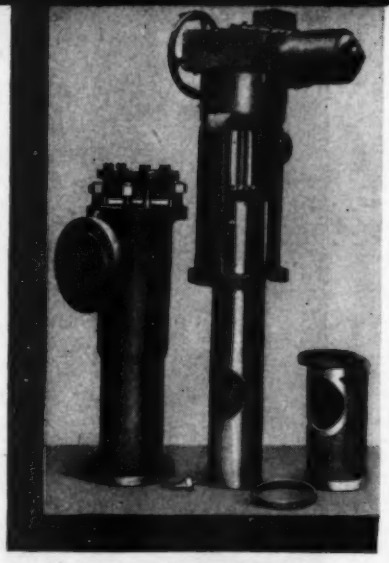
RM 412

LONG LIVE YARWAY DIGESTER VALVES

. . . with new 17/4 PH Stainless Steel Plungers



8" Yarway Digester Blow-Valve, motor-operated, remote-controlled at large Florida mill. Remote-controlled, hydraulically-operated valves also available.



8" Yarway Seatless Digester Blow-Valve ready for assembly.

NEW YARWAY SEATLESS DIGESTER BLOW-VALVES are better than ever . . . because a new type plunger solves the problem of wear and corrosion always present in digester service.

This 17/4 PH Stainless Steel Plunger has corrosion-resistant properties approaching those of chrome-nickel steel. In addition it has a hardness of 400 Brinell. Hard monel split plunger head bushing also contributes to longer life.

Typical experience has been in a large Florida mill. After 23 months service an 8" Yarway Digester Valve was dismantled for inspection. The 17/4 PH plunger *was in perfect condition—not a scratch on it.* In all that time the packing had not been changed or repacked, and there was *no liquor leakage.* Outage time of digesters has been reduced to a minimum.

Want to know more about these Yarway Seatless Digester Valves? Write . . .

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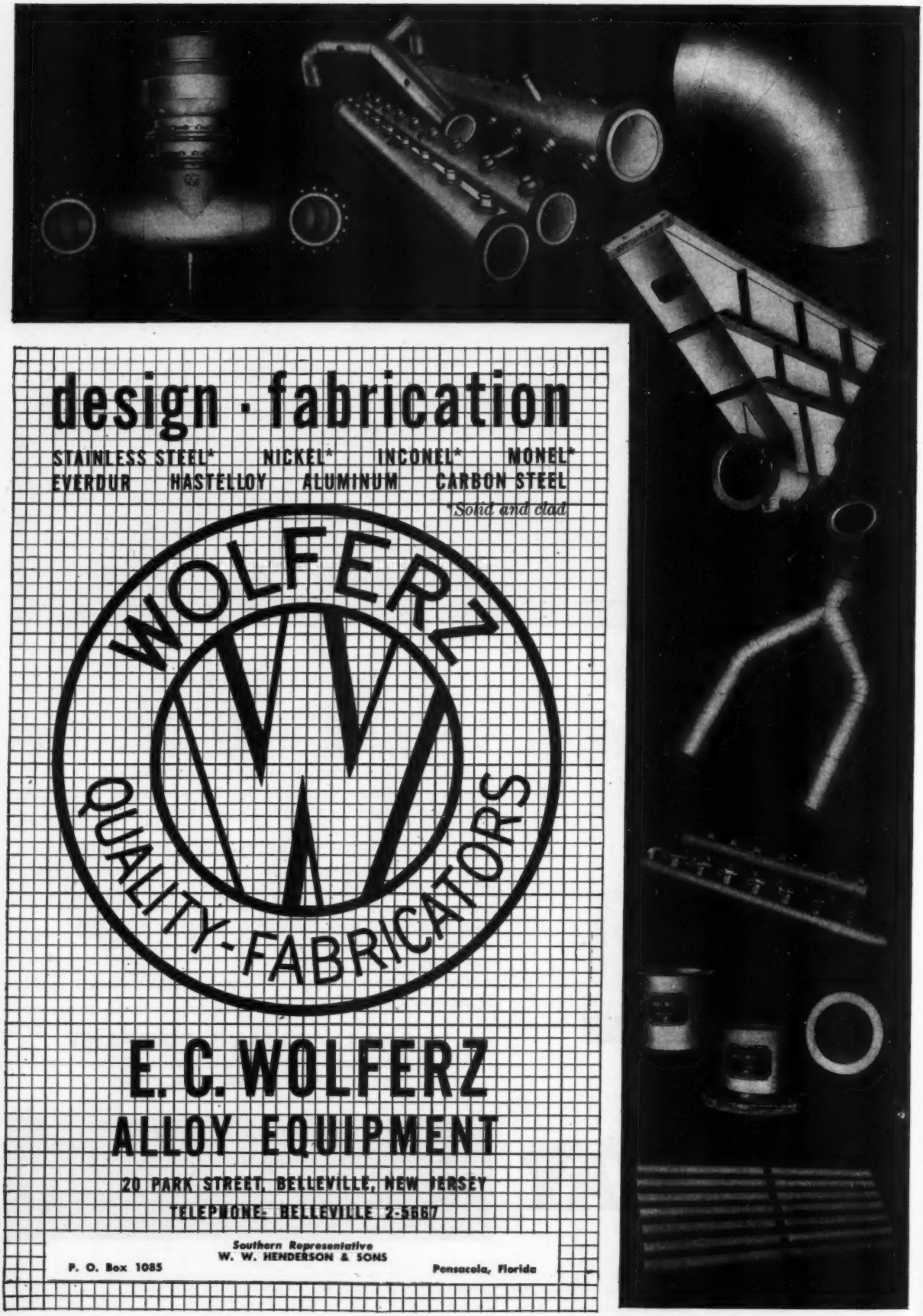
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appleton felts make good paper

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From pulpwood to finished rolls-- LINK-BELT helps cut paper-making costs

At this modern mill, Link-Belt conveyors are vital to the efficient handling of tons of pulpwood, chips, refuse and lime.

Take advantage of undivided responsibility for design, equipment, erection and performance of complete materials handling facilities

A typical modern paper mill uses scores of Link-Belt conveyors and drives. Logs, chips, pulp and finally rolls of paper require continuous, high-speed handling. Also systems are required to handle fuel, chemicals and waste.

For every step, Link-Belt will design the entire system . . . erect the job if desired . . . and accept complete responsibility for successful operation.

It's easy to take advantage of the experience Link-Belt has accumulated on hundreds of jobs. There are Link-Belt manufacturing plants and sales offices near every major producing area . . . providing working knowledge of regional problems. Call the one nearest you for facts on how Link-Belt's broad facilities can best serve you.

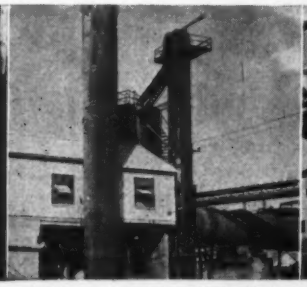
LINK-BELT

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

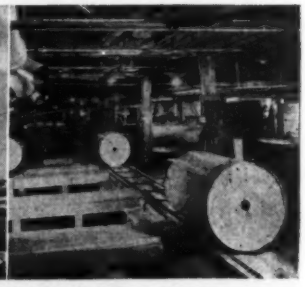
ONE SOURCE . . . ONE RESPONSIBILITY FOR MATERIALS HANDLING AND POWER TRANSMISSION MACHINERY

LOGS, in the wood yard, are conveyed to storage or direct to barkers and chippers by Link-Belt equipment.

CHIPS—Link-Belt feeders, conveyors, vibrating screens, handle and classify materials efficiently.



COAL and BULK CHEMICALS—For any material you get the right handling equipment from the complete Link-Belt line.



PAPER ROLLS—Link-Belt conveyors and drives coordinate product movement from machine to final shipment. 13.401

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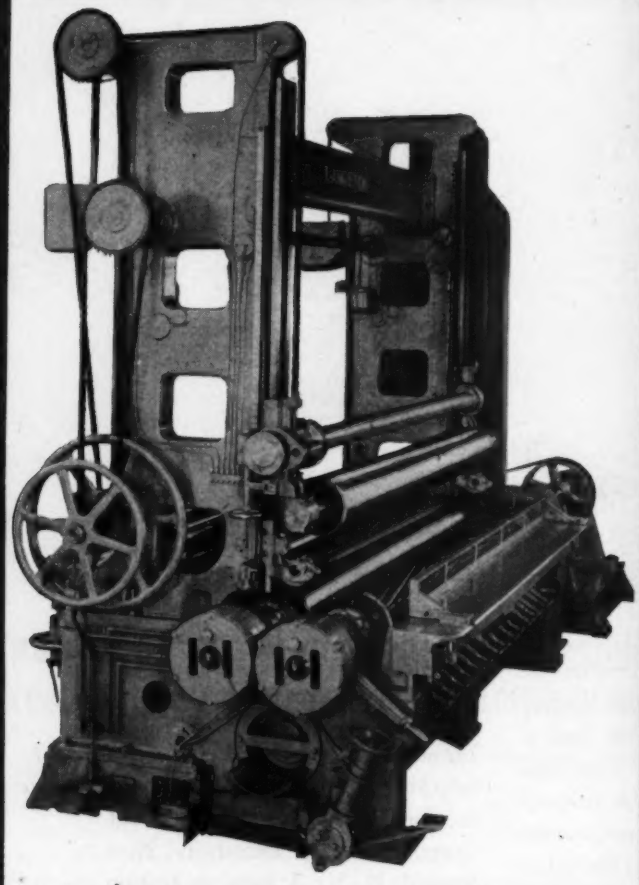

Heavy, stream-lined cast iron "box section" side frames are bolted and pinned to massive cast iron bedplate. All controls are located for convenient operation and adjustment. All rotating members are dynamically balanced for high speed production of 3500 feet per minute and higher. You can rely on Langston's for highest quality rolls with minimum upkeep.

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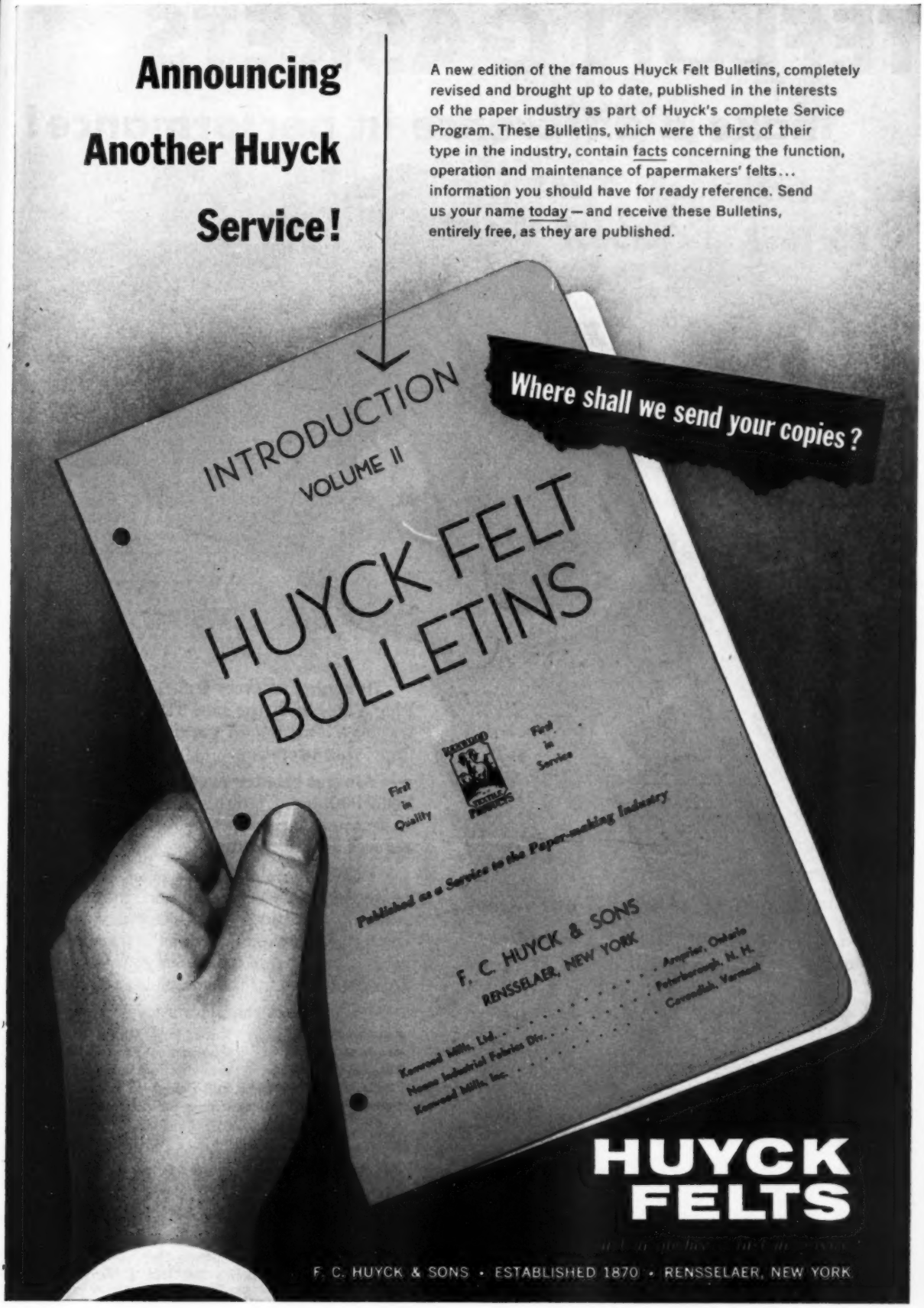
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VOLUME II
HUYCK FELT BULLETINS
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Published as a Service to the Paper-making Industry
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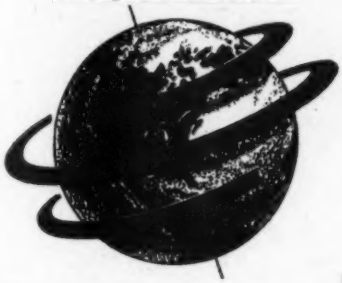

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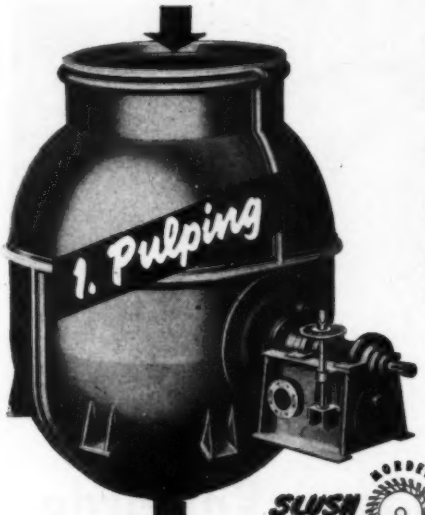
THE 3 BASIC TREATMENTS IN YOUR STOCK PREPARATION

EACH STOCK requires one or more of these basic treatments.

EACH MORDEN MACHINE is engineered, standardized and proven in one of these basic treatments.

EACH MILL'S requirements suggest various applications.

OUR EXPERIENCE in assisting mills to develop simple, effective and economical stock preparation systems is available to you upon request.



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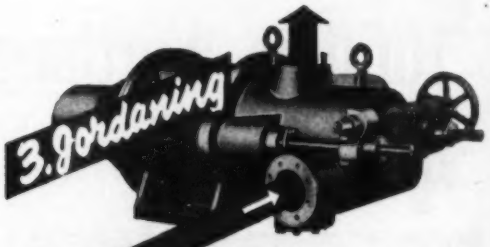
...for completely defibering all pulps, papers and brokes (even wet strength) without auxiliary equipment.



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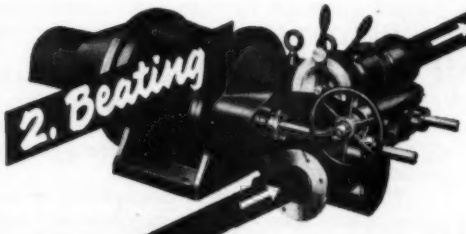

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...for brushing, fibrillating and hydrating individual fibers for maximum strength development.

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STOCK PREPARATION EQUIPMENT
MACHINES COMPANY

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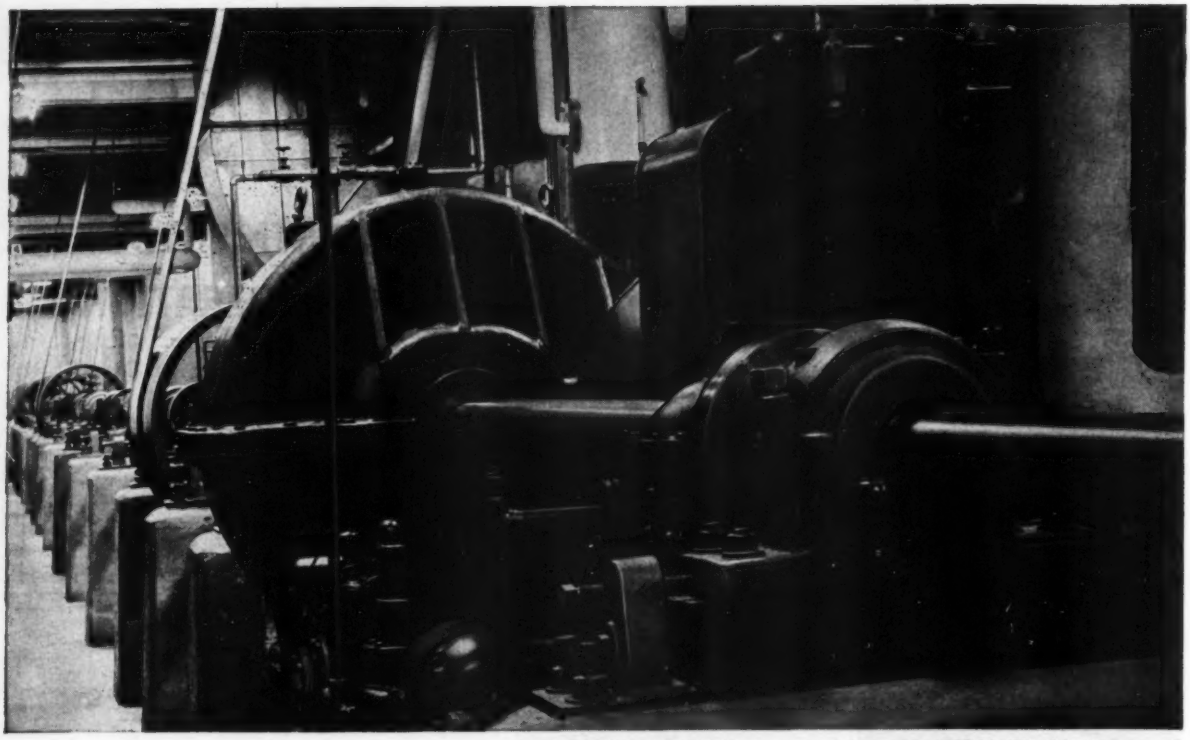
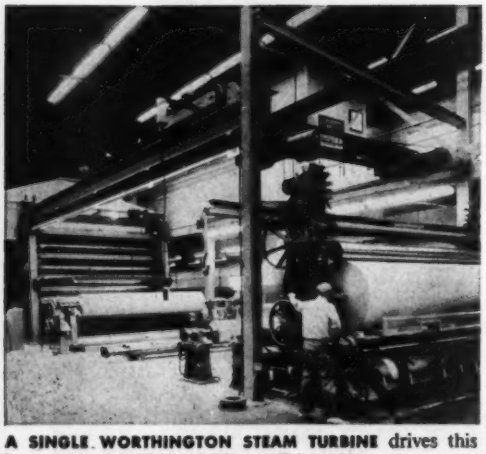


SMOOTH, STEADY SPEEDS are assured by this 1000-hp Worthington geared turbine driving the line shaft of Nekoosa-Edwards' new paper machine.

1000-hp Worthington steam turbine drives new paper machine at Nekoosa-Edwards



A SINGLE WORTHINGTON STEAM TURBINE drives this huge paper machine at Nekoosa-Edwards.

• Making high-grade specialty and printing papers is exacting precision work—with smooth, steady paper-machine speed the main requirement. That's why, when the Nekoosa-Edwards Paper Co., Nekoosa, Wisc., installed their new Puseyjones 180" Fourdrinier recently, a Worthington 1000-hp steam turbine and reduction gear were selected to drive the lineshaft.

The turbine's sensitive governor holds speed to within ¼ of 1% above or below the governor setting, regardless of normal steam or load changes. Speed range is from 200-1200 ft. per minute, suitable for every paper run. Remote push-button control saves labor, minimizes routine attention.

The new Worthington turbine has fully automatic nozzle valve control that assures economical operation at all times. And there's plenty of reserve power in the turbine to handle future additional load requirements. No steam is wasted, either; 50 psi exhaust goes to the plant's process equipment.

Driving paper machines is only one of the many applications of the versatile steam turbine. Get the facts on the way a Worthington steam turbine can solve your drive problems, too. Write to Worthington Corporation, Steam Turbine Division, Section T.3.9, Wellsville, New York.

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value in a fine product

reflects the experience and skills of its makers.

value in Fourdrinier wires is a matter of record ... paper quality and production records in mills throughout America reflect the fact that Appleton Wires are Good Wires!

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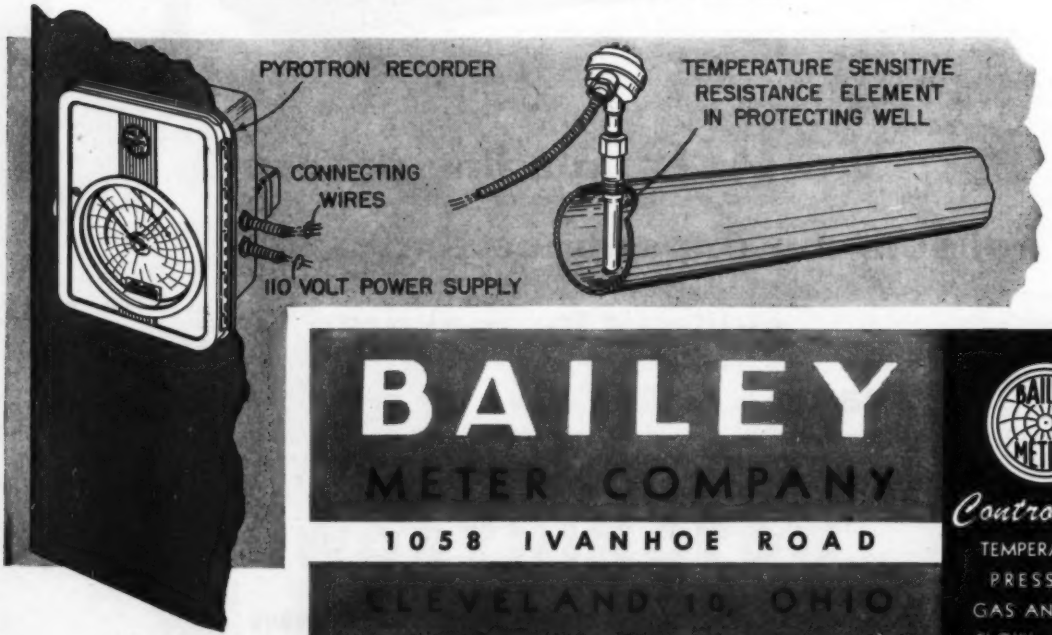
PYROTRON
by BAILEY...

Your best buy for Precision Temperature Measurements In the -300F to 1200F Range

Check These Exclusive Bailey Advantages of Resistance Thermometer Operation

- ✓ Resistance thermometer operation over a complete range from —300 F to 1200 F has been made possible by Bailey's development of a low-cost platinum resistance element.
- ✓ Resistance thermometer operation requires no standard cell, dry battery and cold junction compensator. Uses 115 volt a-c source. Strong signal and high precision of resistance element as compared to thermocouple makes possible the use of narrow range spans.
- ✓ The Bailey Pyrotron is calibrated at the factory and *remains* accurate; no periodic re-calibrations required. Since all elements are matched it is not necessary to calibrate each recorder to its element.
- ✓ Recorder is sensitive to 1/10 of 1% of range span.
- ✓ Ordinary copper lead wires permit remote location of recorder with respect to the temperature sensing element.
- ✓ For complete information, write for bulletin 230-C on the Bailey Pyrotron Electronic Resistance Thermometer. P-27-1



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You secure all four of these outstanding advantages:

1. Improved smoothness and finish
2. More uniform printing surface
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Contact our nearest regional office for technical service regarding your sizing problems.

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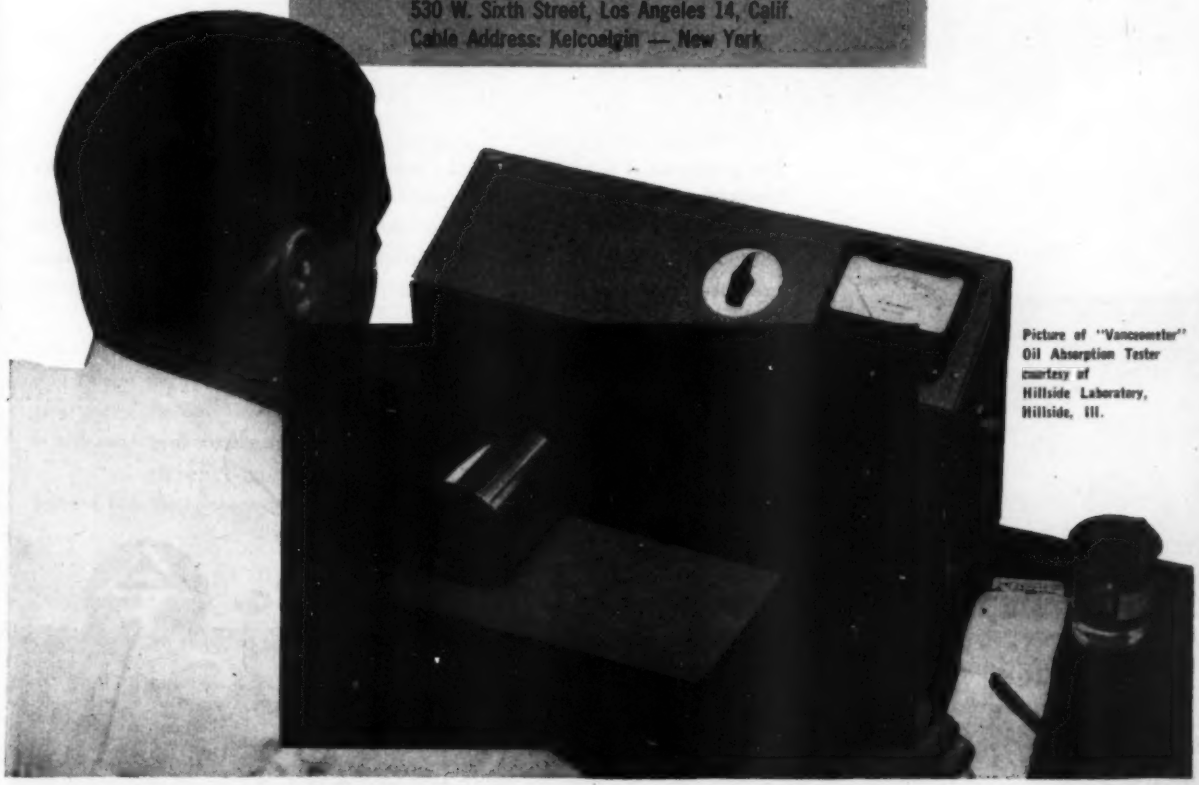
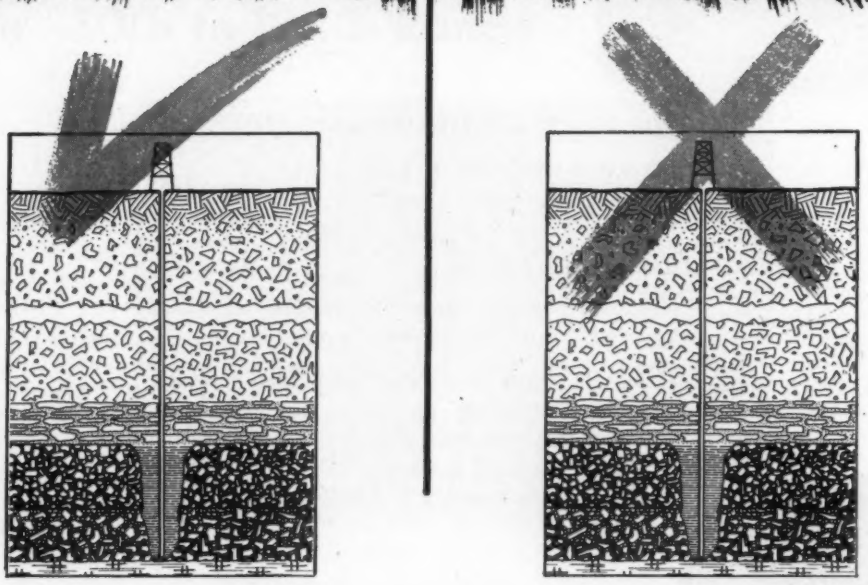


Picture of "Vancometer" Oil Absorption Tester courtesy of Hillside Laboratory, Hillside, Ill.

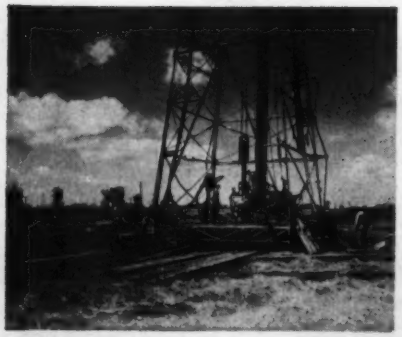
SULPHUR

...why can't *Every* dome produce sulphur?



The production of sulphur in the Gulf Coastal Region of Louisiana and Texas by the Frasch Process, is from underground natural beds found in "domes." However, very few domes have been found to contain sufficient sulphur, if any, to be brought into production.

It is estimated that nearly 200 dome structures along the Coast of the Gulf of Mexico have been investigated over the last half-century but only fourteen have produced sulphur in quantity.



And the presence of sulphur, even in quantity, doesn't always mean a successful producer. Some years ago a dome was found, explored, and proved with the result that a plant for the production of sulphur was erected at a cost of several million dollars. Later it had to be abandoned because the underground conditions did not lend themselves to the use of the Frasch Process.

A dome is a sulphur mine only when it can be worked economically and produce sulphur in commercial quantities.

Texas Gulf Sulphur Co.

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Sulphur Producing Units

- **NEWGULF, TEXAS**
- **MOSS BLUFF, TEXAS**
- **SPINDLETOP, TEXAS**
- **WORLAND, WYOMING**

LOOK WHAT BIRD JONSSON SCREENS TAKE OUT!

This particular collection of glass, metal, rubber, rocks, cellophane, wet strength paper and what have you was taken out of Jonsson Screen rejects in a mill making interior wall boards.

Another mill puts 90 tons per day of excessively dirty stock through a Jonsson Screen and tells us that the Screen paid for itself the first month, out of the saving in machine wires and felts.

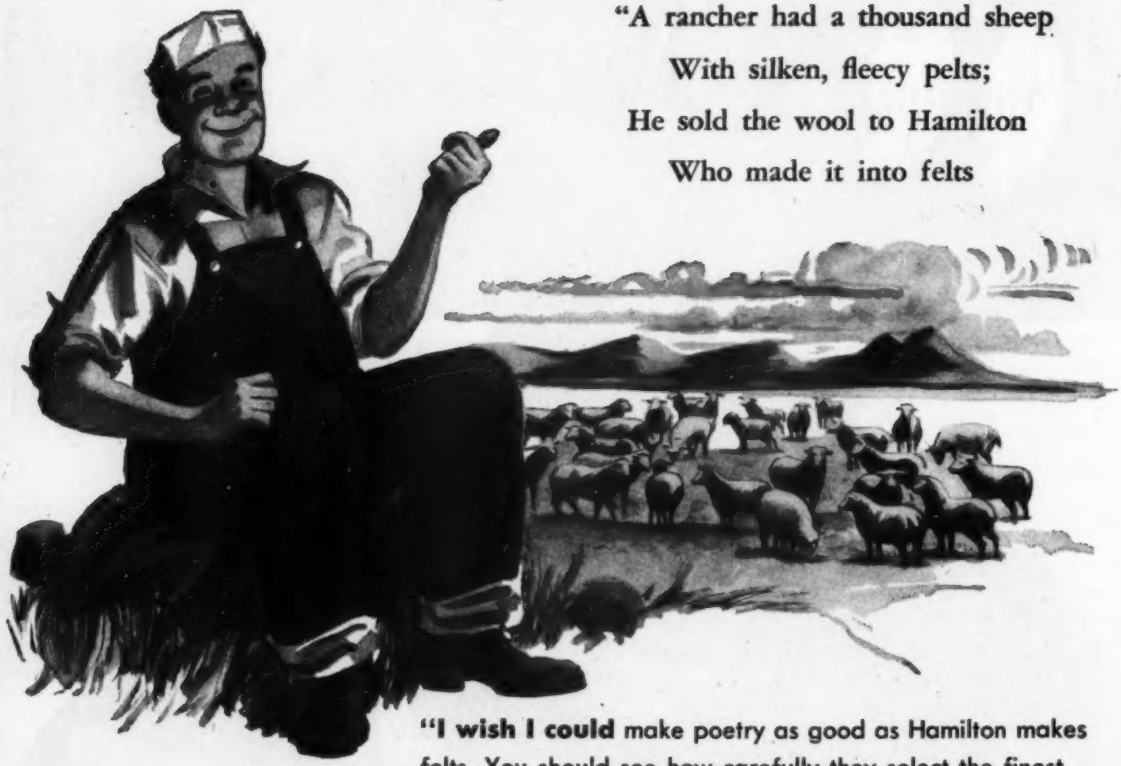
For taking out junk like this, and for removing knots, knuckles, cockle burrs, uncooked fibres — anything you *don't* want in your stock — the Jonsson Screen is your one best bet. Ask us to prove it.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

HAM FELTZ says:

"A rancher had a thousand sheep
With silken, fleecy pelts;
He sold the wool to Hamilton
Who made it into felts



"I wish I could make poetry as good as Hamilton makes felts. You should see how carefully they select the finest wool—how they remove all burrs—how thoroughly they wash them until they really are as white as snow.

"The carding takes out every kink and reduces the wool to a web no thicker than a spiderweb, before it is spun into yarn and woven into Hamilton Felts.

"No wonder manufacturers of paper and board prefer Hamilton Felts! Longer life at higher speeds—larger open spaces between threads to let water out without clogging—pre-shrunk to fit your machine without tearing down or break-in. And the thick nap that leaves no felt marks."

Hamilton Felts

With more than 300 styles of Hamilton Felts from which to select, you can always get the particular weave that will do your work better, faster and at lower cost.

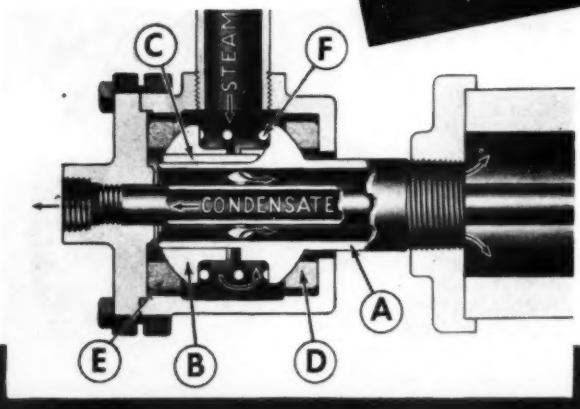
MIAMI WOOLEN MILLS *Established 1858*

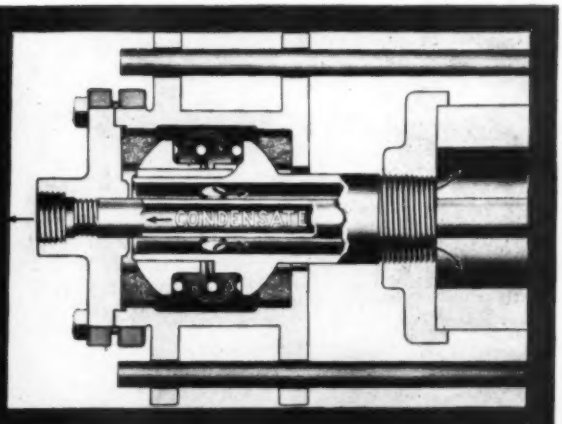
SHULER & BENNINGHOFEN, HAMILTON, OHIO

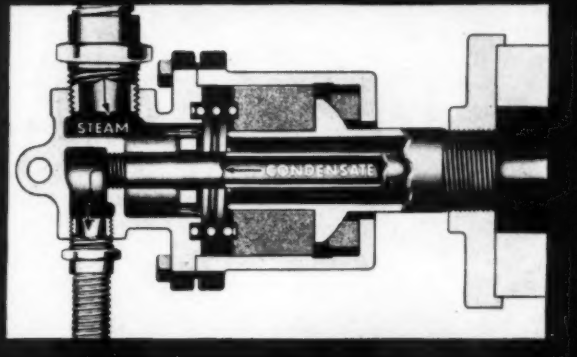
There's a new JOHNSON Rotary Pressure JOINT for every need!

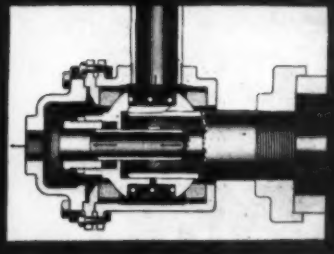
Year after year, in many thousands of installations, mill men have found that the best known way to put steam into, and remove condensate from rotating rolls and drums, is with Johnson Joints. They have proved unmatched in their ability to slash operating costs and boost operating efficiency. Now the newly designed Johnson Joints offer substantial savings in size, weight and price. Also, the effective thickness of the seal rings has been increased as much as 25%.

Shown here are the basic Johnson Joints, with the Type J illustrated at left. Like all Johnson Joints, the Type J is completely packless, self-lubricating and self-adjusting. There is flexibility built right in to provide for lateral and angular misalignment. The Type J is available in the through flow type, and in syphon pipe type.









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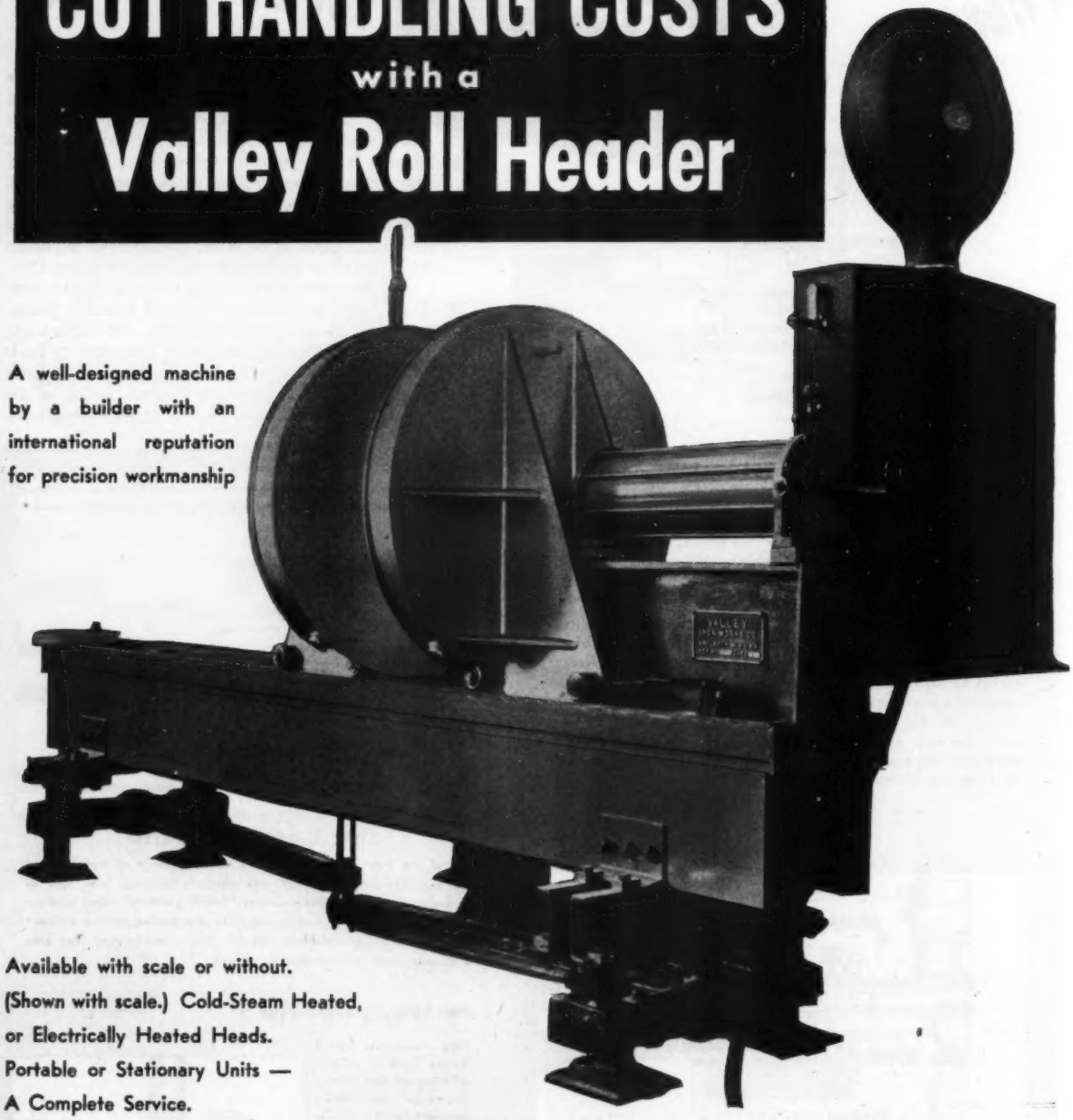
Rotary Pressure Joints • Compressed Air Separators and Aftercoolers
Direct Operated Solenoid Valves • "Instant" Steam Water Heaters

CUT HANDLING COSTS
with a
Valley Roll Header

A well-designed machine by a builder with an international reputation for precision workmanship



Available with scale or without. (Shown with scale.) Cold-Steam Heated, or Electrically Heated Heads. Portable or Stationary Units — A Complete Service.

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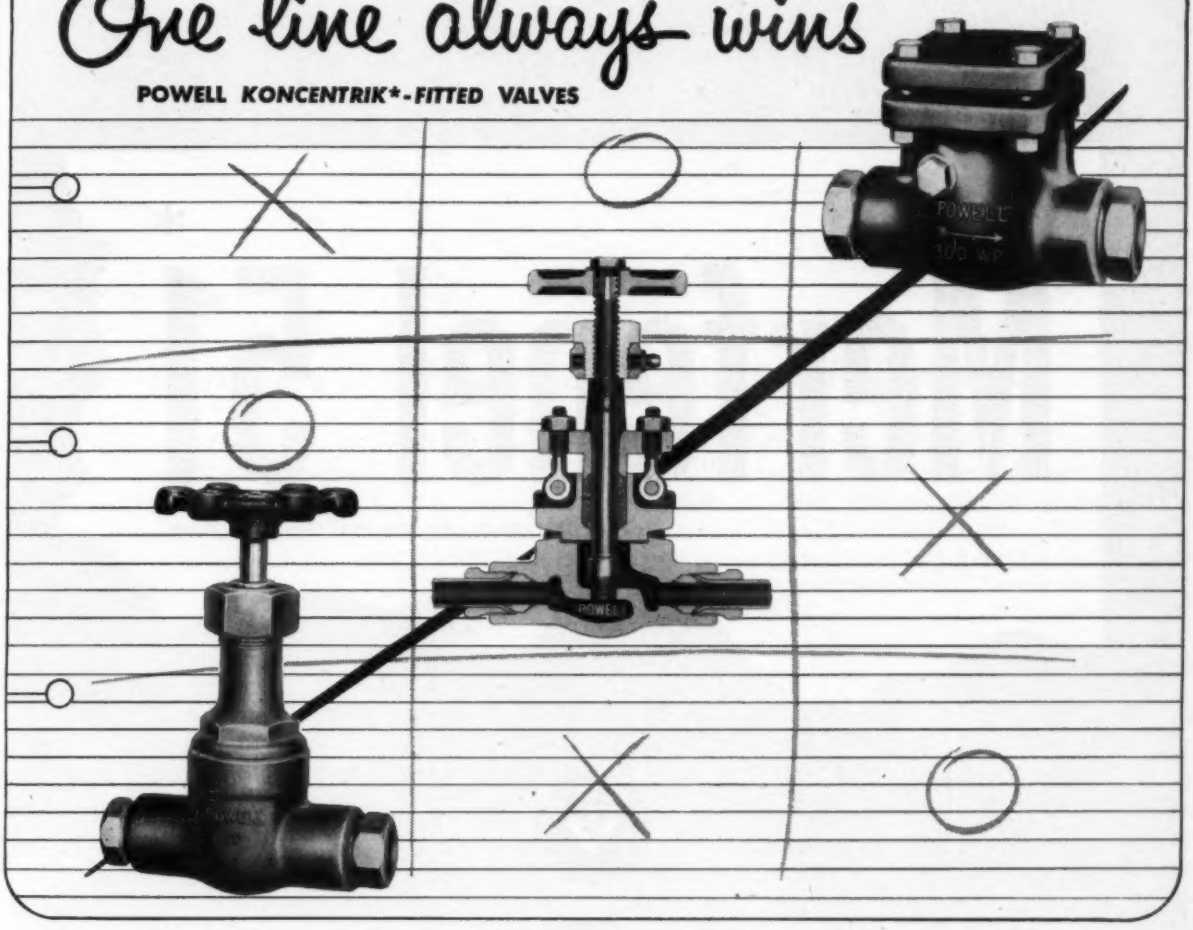
VALLEY IRON WORKS CO., APPLETON, WISCONSIN

One line always wins

POWELL KONCENTRIK*-FITTED VALVES



TOP

KONCENTRIK-FITTED 300-POUND STAINLESS STEEL SWING CHECK VALVE *(Fig. 2345-K).* Bolted cap. Metal or Teflon (on order) discs are hung on a 5° angle. For corrosion-resistant tubing up to 1" O.D.

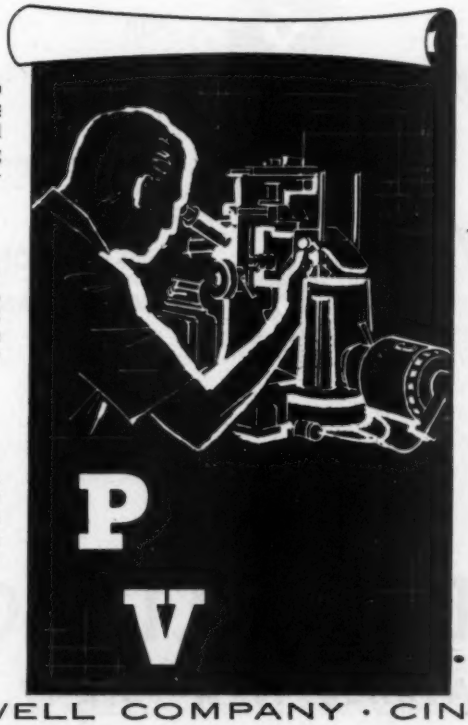
CENTER

KONCENTRIK-FITTED 300-POUND STAINLESS STEEL GLOBE VALVE *(Fig. 2446-K—Sectional).* Bolted bonnet; outside screw stem and yoke. Stem rises through bushing in upper yoke.

BOTTOM

KONCENTRIK-FITTED 200-POUND STAINLESS STEEL GATE VALVE *(Fig. 1832-K).* Screw-in bonnet, inside screw rising stem. Solid wedges regularly furnished; split wedges on special order. For corrosion-resistant tubing up to 1" O.D.

*Trade Mark Reg. U. S. Pat. Off.



You're always the winner when you choose Powell Koncentrik-Fitted Valves for positive leakproof control of corrosive fluids in corrosion-resistant tubing installations. They are especially adapted for instrument lines and for installations requiring thin wall tubing, such as Schedule No. 5 or 10.

The William Powell Company has exclusive rights to use Koncentrik Fittings (the patented full floating seat and tube nut) in connection with Powell Corrosion-Resistant Valves. Based upon an entirely new principle in design, the pipe ends are designed to accommodate the seat and tube nut without the necessity of screwing separate fittings into the valve body.

Powell Koncentrik-Fitted Valves are available in Stainless Steel alloys (304, 316 and 20), Monel Metal, Nickel and Aluminum; and in a wide variety of types—Globe, Gate, Check, Needle and "Y" Valves. If a distributor is not located near you, write us for illustrated circular.

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THE WM. POWELL COMPANY · CINCINNATI 22, OHIO

Merfenel 51*

*PACKED IN ONE AND TWO OUNCE ENVELOPES

A new Product

FOR
SLIME CONTROL
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PRESERVATION OF
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R. T. VANDERBILT CO. INC.

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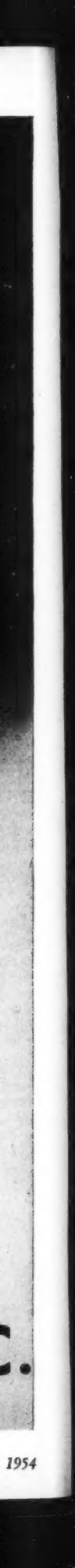


The Paper Industry

March 1954

Tariffs are not the only impediment to foreign trade

The Secretary of Commerce recently stated that, if we resolve tariff policy debates in terms of either free trade or protectionism, the U. S. A. will be the loser no matter which side wins the debate. In his own words, "a debate on free trade or protectionism is just as old-fashioned as the one-horse shay."

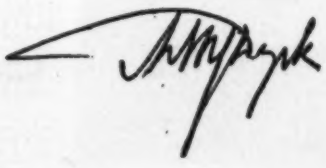
Free trade obviously cannot even be considered so long as there are countries whose economies are sustained largely through the use of forced and slave-labor. Free trade under these conditions would spell for us economic disaster. To countries indulging in the practice of slave labor it would bring prosperity, and — spurred by success — a great temptation to include a still larger segment of their people into the slave labor category. It is impossible to ascertain the limit to which such a situation would bring about moral and economic deterioration. While, from the point of view of the national economy, the United States would stand to be the greatest loser, all of the free world would be faced with economic and moral collapse.

Free trade is also difficult to envisage as long as there exists a wide disparity in the wage structure of different countries. Our industry, which pays its workers an average of $1.75 per hour as against 60 and 30 cents per hour in industrialized European countries, may rightly demand that the bulk of the remarkable purchasing power of the American people be used to buy products manufactured by American industry. Moreover, if under conditions of the existing wage disparity certain precautions to insure a larger home market for American products were eliminated, American industry would suffer irreparable damage and the currently coveted purchasing power of the American people would therewith disappear.

It should further be noted that, while the brunt of world accusations is currently directed against the U. S. tariff structure, tariffs are only one of the factors that complicate international trade. There are equally strong trade impediments practised by countries other than the United States. Among these are (1) import and export quota systems, (2) multiple exchange systems, (3) unsound money policies, (4) discriminatory manipulation of foreign capital, etc. All these factors must be adequately dealt with in arriving at a satisfactory overall solution of the problem of international trade.

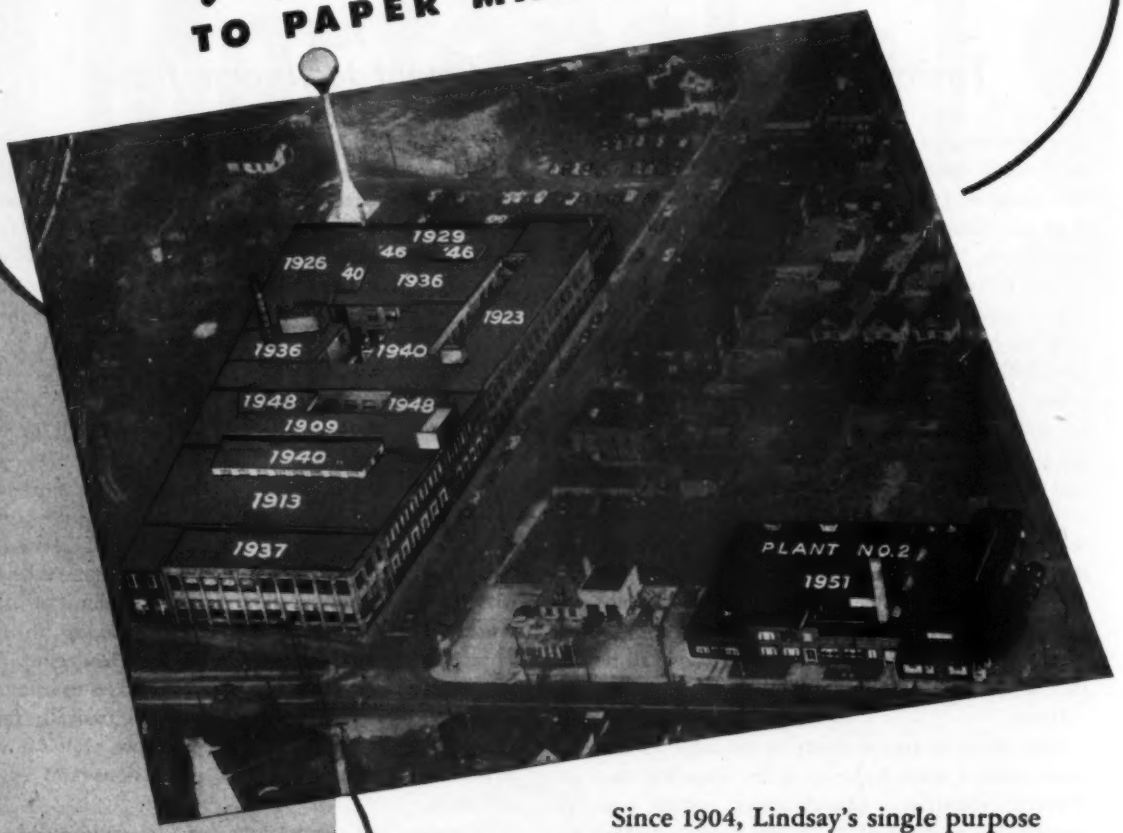
Absolute protectionism also is not the solution. International trade has been and still is the motivating force that promotes better international relations, stimulates progress in the natural sciences, arts, and culture, and leads to better understanding of the world's natural resources. History having thrust upon this country the responsibility of leadership of the free world, it is up to the United States to initiate a constructive trade policy that will be basically fair to all. Constructive leadership, as we well know, often entails the making of concessions and even sacrifices.

However, the responsibility of leadership during a period of international stress and planned aggression entails above all the marshalling of moral and economic strength. This is a prime responsibility that goes with leadership, and this responsibility the USA must shoulder with unbending resolution, irrespective of the sentiments of altruism inherent in its people or the accusations hurled against it by friend or foe. In the face of threatening Communist aggression, directed toward the enslavement of the free world, we must keep our industrial productivity high and our economy strong. In this trust we must not fail.



Fifty Years of Service

TO PAPER MANUFACTURERS . . .



The addition of Plant No. 2 in 1951 expanded Lindsay's facilities greatly. In it are housed our wire mill operations. Our main plant is devoted exclusively to weaving and finishing.

1904 L 1954

Since 1904, Lindsay's single purpose has been to contribute to the quality of paper through continuous improvement in the quality of Fourdrinier wire cloth. Necessarily, the growth of research and manufacturing facilities has kept steady pace. It is our pledge that every effort will be made in the years ahead to promote the excellence and performance of Lindsay Fourdrinier wires.

THE LINDSAY WIRE WEAVING COMPANY
Cleveland 10, Ohio

LINDSAY WIRES Since 1904
FOR PAPER MANUFACTURING

The Paper Industry Current Comment

None satisfied . . . some tax relief possible . . . and concrete

The President's Commission on Foreign Economic Policy has made its report two months in advance. Neither the radical low tariff advocates nor the rabid protectionists are satisfied, each thinking the report has gone too far toward the view of opposition group. However, the special businessmen's committee, which was formed with a prospective $300,000 fund to promote the idea of "Trade, not Aid," has come out wholeheartedly in its support and with long telegrams is urging industrial leaders to work for the passage by Congress of its recommendations.

With this diversity of opinion, it is possible that none of the legislation recommended will be enacted into law this session of Congress. At least, Chairman Reed of the potent Ways and Means Committee has with an associate on that body filed a sweeping minority report. Whether this "old pro" will be able to defeat any effort of the White House to put the recommendations into the statute book remains to be seen.

Meanwhile, Mr. Reed is standing fast on his earlier position in favor of lower taxes, and the new tax bill which his committee is writing is expected to provide some of the tax relief which Mr. Reed insists was promised in the 1952 Presidential campaign.

Production record

Meanwhile the industry has, as was forecasted, broken all records of production. The total output in 1953 was 26,621,010 tons, 9 per cent over the output in 1952 and 2 per cent over that of the previous high year of 1951.

Still another move to use American capital to build paper mills abroad is reported in the announcement by Container Corp. of America of plans to build a mill in Venezuela to produce corrugated shipping containers. Container Corp. will provide half the capital, the balance to come from Venezuelan sources. The new company will be known as Corrugadora de Carton, S. A.

An example of American executive management is seen in a report of a 10-year program by West Virginia Pulp & Paper Co. to offset the increasing man-power costs. By the expenditure of over $90,000,000, the Company has modernized its mills to such a point that from 596,000 tons produced in 1946 with 8,600 employes, its record in 1953 rose to 772,000 tons produced with 800 fewer employes. Last year, the payroll cost per employe had risen to $4,400 from the 1946 figure of $2,360.

Board and concrete

The latest evidence of American ingenuity in the development of new uses for industrial products is the trend toward the use of corrugated board boxes in the construction of concrete buildings. Various experiments in this field are reported to have been markedly successful, and it appears that such usage is, or may eventually be, a potent factor in reducing the cost of building.

Financial Reports

Paper mill securities almost without exception followed the trend of the New York Stock Exchange issues to levels with an average height topping all values for many months past. Hardly a single paper mill issue failed to respond sharply to the upward trend of the financial market.

Net incomes

Celotex Corp.—Net income for the year ended October 31 was $3,024,844, as compared with $1,612,043 in the previous fiscal year.

Champion Paper & Fibre Co.—Net income for nine months ended December 31 was $7,719,152, as compared with $6,715,408 in the comparable period of 1952.

Container Corp.—Preliminary net income for 1953 was $10,127,958, as compared with $10,282,948 in 1952.

Continental Can Co.—Net income for 1953 was $15,680,953, as compared with $14,387,839 in the preceding year.

Eastern Corp.—Net income for the year ended December 31 was $905,935, as against $1,008,699 in 1952.

Flintoke Co.—Net income in 1953 was $5,032,116, compared with $4,896,737 in 1952.

Gair Co., Robert—Net income for 1953 was $6,427,000, as compared with $6,069,054 in 1952.

Great Lakes Paper Co., Ltd.—Consolidated net profit for 1953 was $2,985,969, as against $2,649,597 in 1952.

International Cellucotton Products Co.—Net income for 1953 was $6,820,000, as compared with $5,366,958 in 1952.

Kalamazoo Vegetable Parchment Co.—Net income for the last quarter of 1953 was $634,383, as compared with $416,907 in the similar quarter of 1952.

Keyes Fibre Co.—Net income for 1953 was $1,000,396, as compared with $981,425 in 1952.

Mead Corp.—Estimated net earnings for 1953 were $5,418,000, compared with $5,093,126 in 1952.

Morris Paper Mills—Net income for the year ended December 31 was $1,163,448, compared with $1,225,419 in 1952.

Pabco Products, Inc.—Net profit for the six months ended December 31 was $1,071,542, as compared with $554,593 for the same period in the preceding year.

Rayonier Inc.—Preliminary net income for the year ended December 31 was $10,640,000, as compared with $10,986,457 in 1952.

Riegel Paper Corp.—Net profit for the 52 weeks ended December 28 was $1,622,990, compared with $1,087,427 in the like period a year earlier.

St. Regis Paper Co.—Net income in 1953 was $16,156,903, as compared with $12,701,977 in 1952.

Sutherland Paper Co.—Net income for 1953 was $2,957,303, as against $2,503,958 in 1952.

Union Bag & Paper Corp.—Net income in 1953 was $9,899,000, as compared with $11,060,496 in 1952.

United Board & Carton Co.—Net income for 24 weeks ended November 14 was $288,364, as compared with $472,812 in the comparable period of 1952.

West Virginia Pulp & Paper Co.—Net earnings for the fiscal year ended October 31 was $10,736,000, as compared to $9,471,000 in the previous year.

Dividend declarations

American Box Board Co. has voted a dividend of 40 cents a share on the common stock, payable April 10.

Champion Paper & Fibre Co. has de-

clared a dividend of 50 cents a share on common stock, payable March 1 to holders of record February 9.

International Cellucotton Products Co. has declared a quarterly dividend of 45 cents a share on the common stock, payable April 1 to holders of record March 22.

Minnesota & Ontario Paper Co. has declared a quarterly cash dividend upon its common stock of 50 cents per share, payable April 30 to shareholders of record April 2.

National Container Corp. has declared the regular quarterly cash dividends of 15 cents per share on the common stock and 31¼ cents per share on the $1.25 convertible preferred stock, $25 par value, both payable March 10 to stockholders of record February 20.

Nekoosa-Edwards Paper Co. has declared a dividend of 40 cents per share, payable March 10 to shareholders of record February 26.

Nekoosa-Edwards Paper Co. has declared a fourth quarter dividend of 40 cents per share, payable December 10, plus a special 40-cent dividend, payable January 5.

Pabco Products, Inc. has declared a 25-cent dividend on the common stock.

Riegel Paper Corp. has voted the regular quarterly dividend of 25 cents and an extra 25 cents on the common, payable December 10 to stock of record December 1.

St. Croix Paper Co. has ordered a dividend of $1.20 on the common, payable December 15 to stock of record December 5.

St. Regis Paper Co. has declared a quarterly dividend of 37½ cents a share on the common stock, payable March 1 to stockholders of record February 6. The quarterly dividend of $1.10 a share on the preferred stock was declared payable April 1 to holders of record March 12.

Scott Paper Co. has declared a quarterly dividend of 75 cents a share on the common stock, payable March 10 to stockholders of record February 24, and the regular quarterly dividends of 85 cents a share on the $3.40 cumulative preferred stock and $1 a share on the $4 cumulative preferred stock, both payable May 1 to stockholders of record April 17.

Simplex Paper Corp. has declared a dividend of 25 cents a common share, payable December 18 to stock of record December 8.

Sutherland Paper Co. has declared a quarterly dividend of 40 cents on the common stock, payable March 15 to record February 12.

Union Bag & Paper Corp. has declared the regular quarterly dividend of 75 cents on the common stock, payable December 24 to stock of record December 14.

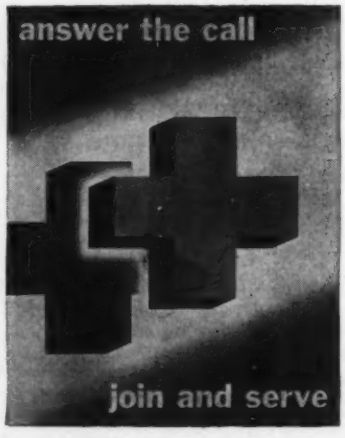
Whitaker Paper Co. has declared a regular dividend of 40 cents and an extra dividend of 40 cents a share, both payable April 1 to stockholders of record March 19.

Paper mill corporate changes

American Sisalkraft Corp. is the new name for the merged Sisalkraft Co. of Chicago and American Renforced Paper Co. of Attleboro, Mass. The two firms, which had been operated as separate organizations, are being combined for a more efficient and integrated structure.

Alford Cartons of Ridgefield Park, N. J., a subsidiary of Contintental Paper Co., has purchased the corrugated box plant formerly owned by Robert Gair Co. Inc. at Bogota, N. J. The Bogota property was abandoned as an operating unit when Gair opened its new plant at Teterboro.

Crown Zellerbach Corp. has issued an additional 3,720 common shares, par $5, to employees under the selected employees' stock option plan. There are 7,209,374 shares now outstanding, leaving 7,790,626 shares in the treasury.



St. Regis Paper Co. has registered 93,000 shares of common stock with the Securities and Exchange Commission. The stock would be used to buy control of Superior Paper Products Co., Pittsburgh, Pa., subject to SEC approval. St. Regis will offer the 93,000 shares of its common stock for 30,000 shares of Superior common. If the exchange goes through, Superior will become a subsidiary of St. Regis. The company holds written options to buy from nine Superior stockholders 15,911 shares.

Stock and Bond Quotations

New York Stock Exchange — Stocks

Closing Prices	Feb. 10, 1954	Jan. 20, 1954
A.P.W.	*2⅞-3⅛	*3⅛-3⅜
Celotex	18⅜	18⅝
Same Preferred	16¼	16¼
Certain-teed Prod.	14⅜	14
Champion P & F	35½	33½
Same Preferred	*103-104	102
Cheasapeake Corp.	27½	*27-27⅜
Container Corp.	46	43⅜
Same Preferred	102½	*101½-104
Continental Diamond	12¼	*11⅝-11⅝
Crown Zellerbach	39¼	35⅝
Same Preferred	102	*102-102¼
Dixie Cup	47	43¼
Eastern Corp.	*17¼-17⅜	16⅝
Robert Gair	21¼	20½
Gaylord Container	26⅝	25½
Great Northern	60⅜	57½
Hammermill	14⅜	14⅜
International	60¾	57⅜
Same Preferred	*104¼-106¾	*102½-103
Kimberly-Clark	51⅜	49
Same Preferred	109	*107-109
MacAnd & Forbes	42	*41-41½
Marathon	22	20⅞
Masonite	17¾	18¼
Mead Corp.	32	30
Same Preferred	*95-98½	87½
National Container	11¼	10½
Same Preferred	22⅜	20⅝
Rayonier Inc.	29¼	28
Same Preferred	*34¼-34⅝	33
Scott Paper	76¾	71⅝
Same $3.40 Pref.	93½	92½
Same $4.00 Pref.	*102½-103½	*101-103
St. Regis Paper	22⅜	21⅝
Same Preferred	*90½-99	*94-95
Sutherland Paper	35¼	32⅛
Same Preferred	125½	*113-115½
Union Bag & Paper	45½	45¾
United B & C	15	14⅝
United Wallpaper	1¾	1¾
Same Preferred	*16¾-17¾	*16¼-17½
U. S. Gypsum	123¼	177
Same Preferred	*177¼-179	117
West Va. P & P	28⅞	25¼
Same Preferred	108	108

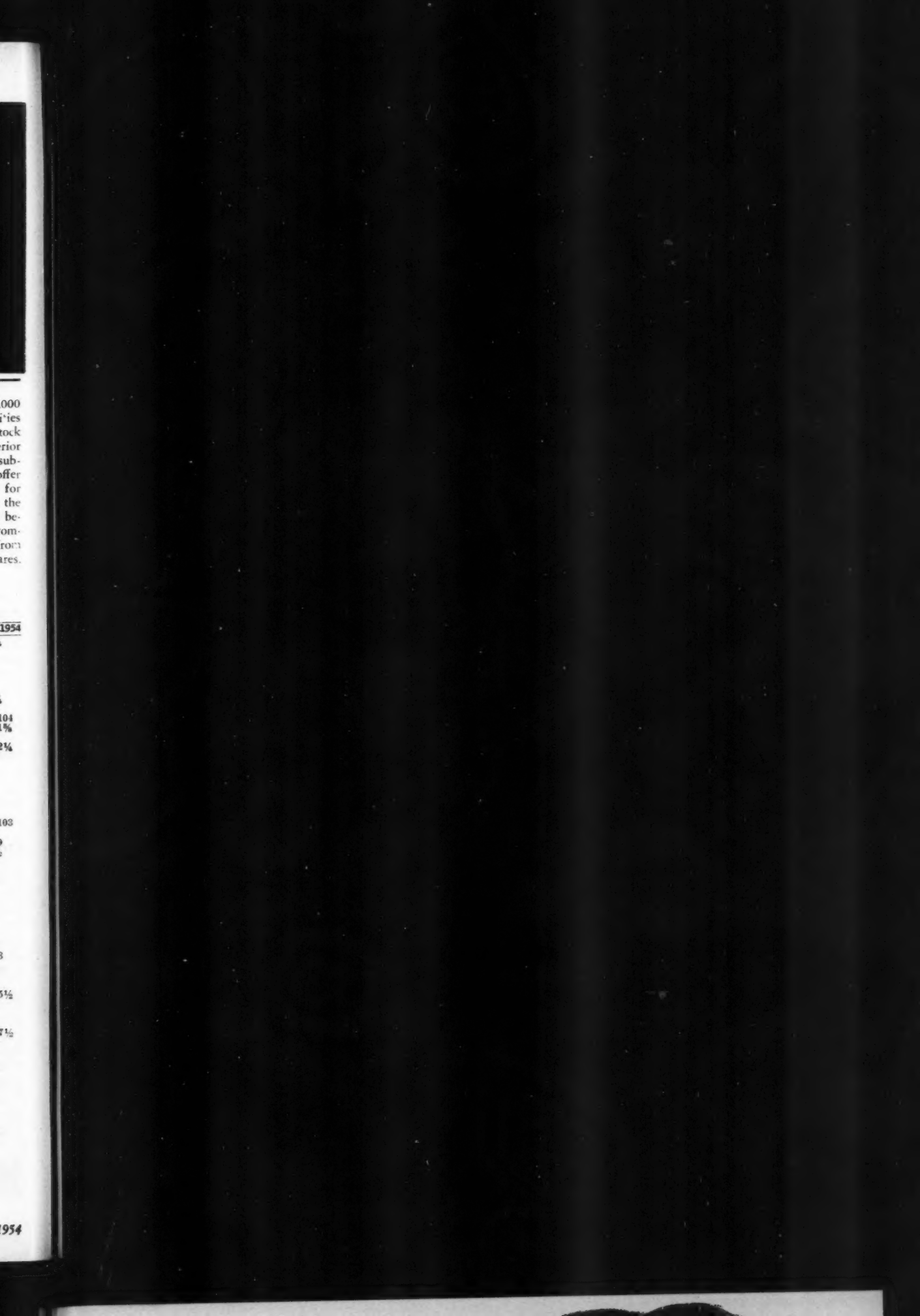
New York Stock Exchange — Bonds

Celotex 3½%	—	98
Champion 3%	—	97
Mead Corp. 3%	—	—

American Stock Exchange — Stocks

American Writing	12¾	—
Brown Co. Common	12	10⅝
Same $5 Pref.	101	92½
Same $3 Pref.	52	51
Puget Sound	33¾	34

*Closing Bid and Asked Prices.



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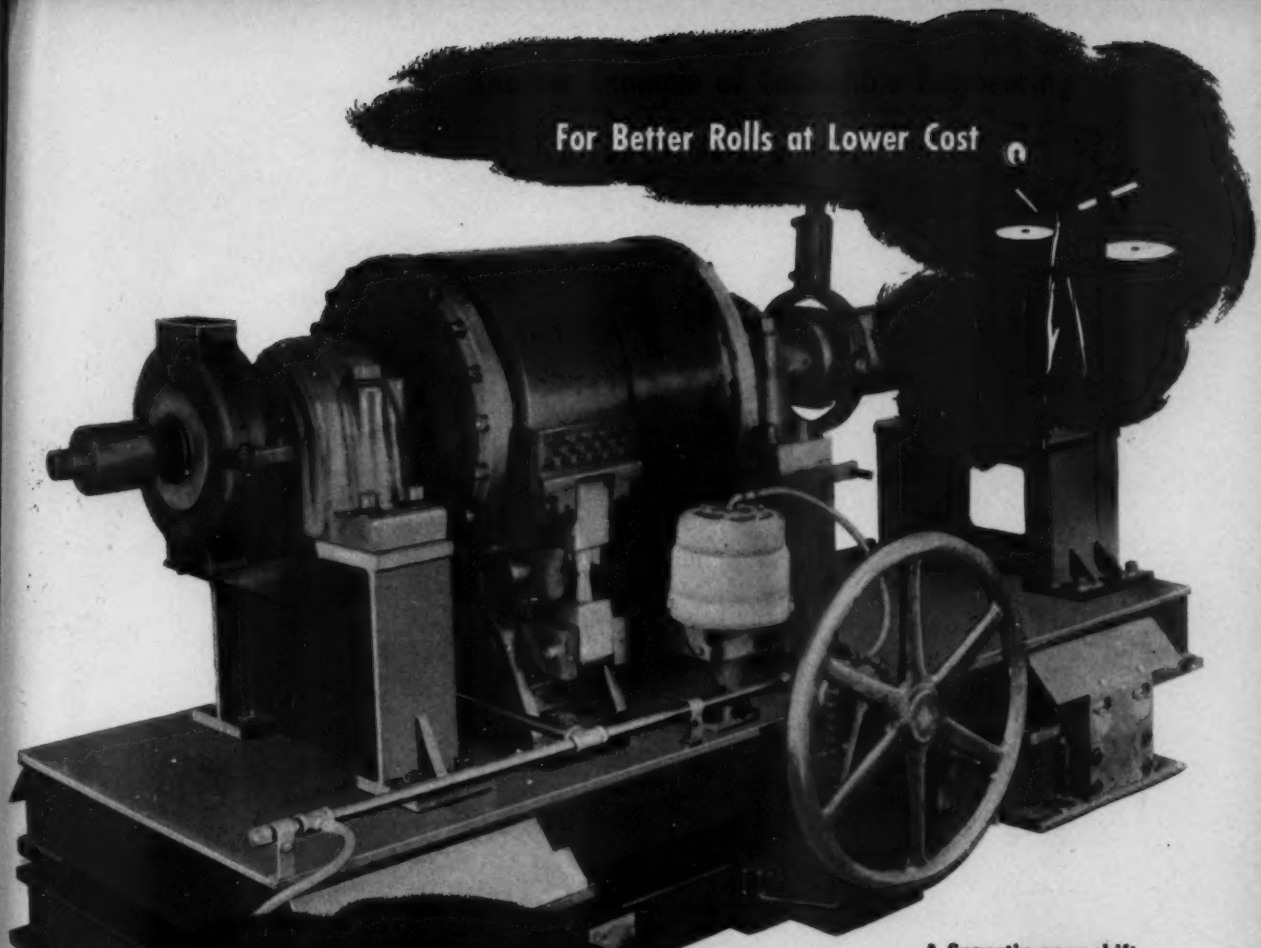

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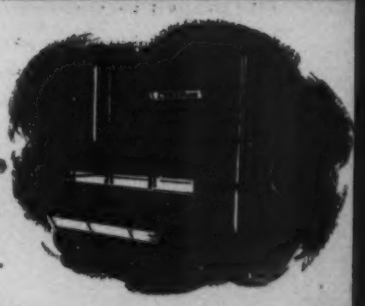
H-BRAKE high torque and high heat transfer capacity answer your need for reliable, continuous rewind braking under the most severe running and stopping conditions. ● **H-BRAKE** capacity range (in four models) is 40, 80, 120, and 160 running horsepower with corresponding torque outputs of 36,000; 72,000; 108,000; and 144,000 inch pounds. Brake straps are pneumatically operated. Equal braking torque is applied in either direction of rotation with the same value of air pressure. ● **H-BRAKE** water cooling system produces a high velocity, highly turbulent flow for maximum cooling effect. ● **H-BRAKE** is flexible and adaptable. For example, a single set-up controls stock ranging from low grade bible paper to heavy kraft board. This flexibility assures optimum tension control, safeguards roll quality, eliminates the snap-off problem. *Follow Cameron engineering!*



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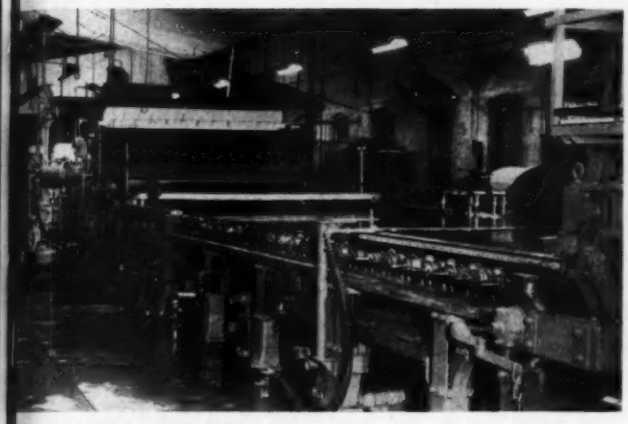
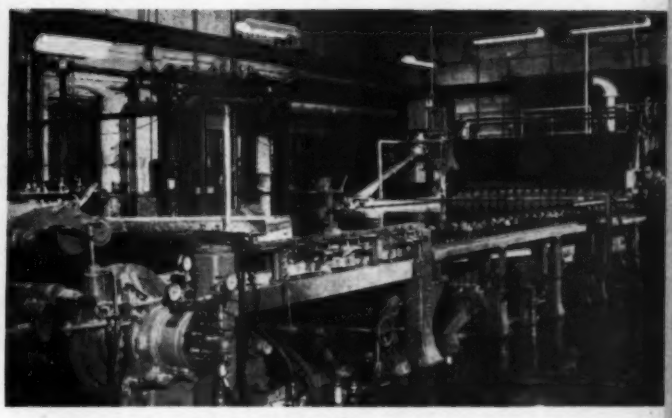
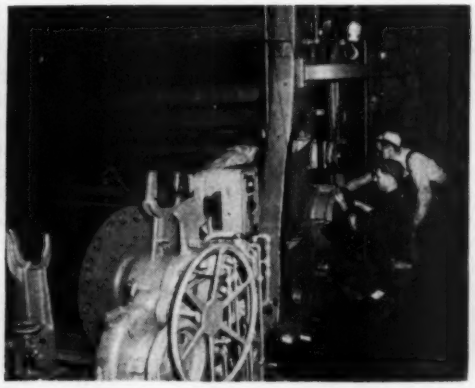


NEKOOSA-EDWARDS machine wet end showing new power console in front of the press section

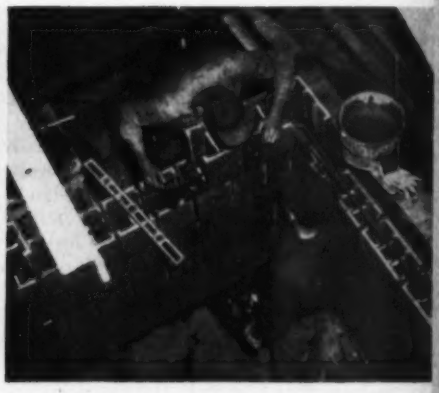


NEW VALLEY fourdrinier in operation after the rebuild; project was completed ahead of schedule

INSTALLATION OF Valley Iron Works fourdrinier rebuild



BOTTOM CALENDER roll and queen roll installation



NEPCO CREW at work on tile concrete-reinforced couch pit

Nekoosa-Edwards No. 4 Gets New Look in Record Time

MAJOR IMPROVEMENTS resulted from the recent rebuilding of No. 4 paper machine at Nekoosa-Edwards Paper Co. in Nekoosa, Wis. The project made possible high quality at increased safe operating speeds ranging from 650 to 800 fpm. Production consists of fine paper grades in basis weights of from 20- to 55-lb. sheets.

The machine was shut down on December 7 and was back in operation December 22, nearly a week ahead of the planned schedule.

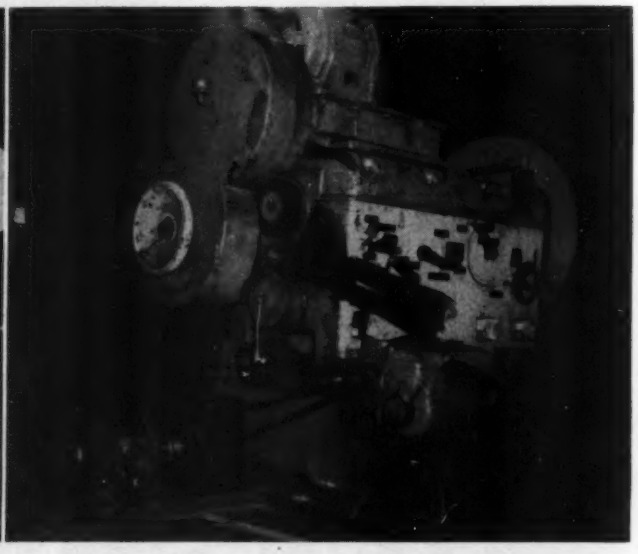
Major parts of the face-lifting were the extensive rebuilding of the fourdrinier — including a new wire 10 ft. longer than the one it replaced, a new tile couch pit, the revamping of the white water system, new bearings for the two bottom calender rolls, and considerable piping changes.

Additionally, the steam engine was overhauled, as were the line shaft and drive mechanism. The entire machine received a coat of light green paint upon completion of the extensive engineering program.

According to C. F. Watson, mill engineer, ". . . desired operating speeds have now been attained and even exceeded in some instances, with the various grades of paper duly reflecting their respective quality improvements. It is further believed that the machine as a whole is now better enabled to increase its production of a superior product in a very highly competitive manner."

The Valley Iron Works Co. fourdrinier rebuild included a 20-in. diameter heavy-duty bronze breast roll, rubber covered and equipped with anti-friction bearings. The installation called for a new Gilbert & Nash automatic wire guide (Appleton Machine Co.) with totally enclosed Valley Iron Works back gearing, an

Machinists Tackle Tough Milling Job at Union Bag



MONEY AND TIME were saved recently at the Union Bag & Paper Corp. plant in Savannah, Ga., when machinists tackled a tough milling job on the suction area of a couch roll; because of a redesigning of the roll it was necessary to machine 1½ in. off the suction surface; the maintenance department rigged up a tool post milling machine capable of doing the job to 1/64-in. tolerance; otherwise, the job would have been sent to a Chicago company.

Above, left, machinists E. B. Stallcup and George Alkofer watch the cutting tool at work lowering the suction area's surface; it required a little more than eight hours for the spiral shaped cutting gear to move the length of the area; at right is the motor and chain drive used to move the tool post milling machine

automatic constant tension wire-stretching device, and a table rail section equipped with two Beloit shake units.

The effective forming space of the machine was increased by lengthening the 128-in. wire from 66 ft. 9 in. to 75 ft. A Nash Engineering Co. H-10 vacuum pump with a 125-hp drive motor was installed on the suction couch. The latter had been previously rebuilt to incorporate the latest type Beloit Iron air-loaded packing holders.

Also included in the major revamping were: new stainless steel suction boxes; enclosed box section stands and supports; stainless white water trays and troughs under the table roll section, and new sole plates extending from the suction couch to a point 2 ft. beyond the centerline of the breast roll.

Machine pit overhauled

A stainless steel white water box was supplied by Felker Bros. Mfg. Co. on the drive side of the machine for collecting saveall tray water.

Chemical Linings Inc. installed a new tile concrete-reinforced couch pit to handle the couch broke during start-ups and breaks. Pit equipment included an E. D. Jones & Sons Co. agitating apparatus and a Goulds Pumps Inc. vertical type stock pump.

The machine pit proper was revamped and tiled by a Nekoosa-Edwards maintenance crew. All piping and other changes required in the relocation of the existing Valley Iron stock entrance equipment and the changing of the white water system were also undertaken by the Nepco staff.

The calender stack was reconditioned and equipped with Beloit Iron water-cooled, ring-oiling bottom roll bearings, Beloit bronze queen roll bearings, and Lodding Engineering Co. roll doctors.

The entire drive system was inspected and overhauled and a new power console added at the press section to facilitate complete control over the power factors involved in the operation of the wet end of the machine. The calender drive unit was raised to accommodate the new bottom roll bearing changes, folowing which the entire machine was completely cleaned and repainted.

•

Marathon of New York Reveals Long-Range Plan

Long-range expansion at the Oswego, N. Y., plant of Marathon Corp. of New York Inc. was announced in January. With completion expected late next year, the program includes the renovation of existing buildings, erection of new structures, installation of machinery, and rearrangement of facilities.

The construction will include a pressroom, all-weather ramp, liquid wax storage house, ash collector, coal hopper shed, and a warehouse. This project will give Marathon a productive fourth link in its chain of carton converting plants and an increase in service to customers in the eastern market.

•

New Recovery Furnace for Nekoosa-Edwards Paper

Nekoosa-Edwards Paper Co. will replace its recovery furnace at Nekoosa, Wis., with a new, larger unit. The present furnace was purchased in 1941; mill production has since expanded to a point beyond the unit's capacity.

The new furnace will have a rated capacity of 350 pulp-tons, more than twice the designed capacity of the one in operation, and will make possible the expansion of pulping facilities by 100 tons. At least two years will be required for installation. The cost has been estimated at $1,500,000.

According to a Nepco spokesman, the furnace will result in substantial operational savings, in addition to providing increased pulp production. A further advantage will be that about 25 tons of pulp production will be shifted from Port Edwards to Nekoosa, resulting in a considerable reduction of sulfite waste liquor.

Modern Community Carved from Remote Ontario Wilderness

DURING LAST SPRING and summer a remote corner of northwestern Ontario bushland was transformed into a modern community camp. About 25 families, whose breadwinners harvest pulpwood for the Minnesota & Ontario Paper Co. newsprint mill at Kenora, are housed in comfortable four-room dwellings. They are served by a combination dormitory and cookery—that now doubles as a church and theater, an office and a warehouse.

The new community—designated as Camp L-314—is located on Hillock Lake some 38 miles southeast of Kenora. It is the first of two permanent camps that Mando is building in the Highwind and Dryberry Lake area, a region capable of a sustained annual output of 15,000 cords of pulpwood.

The dwellings are sheathed and insulated with Mando's Insulite board. All the camp buildings are wired for electricity so that the families may enjoy the conveniences of refrigerated food, washing machines, and other modern household appliances.

Long-range objective

The camps are important to Minnesota & Ontario's long-range forest management objective of sustained-yield production. The development of the areas, which has been planned for some years, required the building of 22 miles of all-weather gravel road into the area from the Kenora highway; construction of the two permanent camps, and the rebuilding or repairing of three dams to facilitate transportation of pulpwood by water from these areas to the mill.

Central to the Highwind and Dryberry areas is Dryberry Lake, which—with Berry Lake and adjoining creeks to the west emptying into the Lake of the Woods—forms a natural water transportation route to the Kenora mill.

Twenty-five families with 46 children are now living at L-314. Entertainment includes trips to Kenora and a weekly movie in the camp dormitory. Children of school age are taking correspondence courses, with plans now developing for the construction of a school that will be ready this fall.

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Two Pulp Mills Set for B. C.

Construction is to begin soon on two pulp mills on Vancouver Island. Two other projects are under consideration.

E. P. Taylor, chairman of B. C. Forest Products Ltd., has declared that his firm is ready to go ahead with a plant on the east coast of the island. B. C. Forest Products holds most of its standing timber in this area and will shortly be granted a forest management license by the government.

The second project is that of Crown Zellerbach Corp., which has announced the addition of a 300-ton kraft pulp mill to the Elk Falls newsprint operation. The plant will provide plup material for a conversion plant at San Francisco.

Another forest management license is likely to be issued in the near future to Hecate Development Co. as a preliminary to the erection of a pulp or newsprint mill at Kitimat. (Hecate Development is jointly owned by Powell River Co. Ltd. and Aluminum Co. of Canada.) Still another pulp plant is in the early stages of negotiation for the Prince George area.

•

United Board & Carton Acquires Densen Banner Co.

United Board & Carton Corp. has announced the acquisition of Densen Banner Co. Inc. of Ridgefield Park, N. J. The firm is one of the oldest and largest folding carton and corrugated box concerns in the New York metropolitan area.

United Board & Carton owns and operates three paperboard mills with a daily capacity of 350 tons, three folding carton factories and a laminating plant, all of which are located in New York and Ohio. There will be no change in the management or personnel of Densen Banner. It will continue to serve its present customers.

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Rome Kraft Operation Expected in Mid-1954

Construction of Rome Kraft Co.'s new containerboard mill near Rome, Ga., is on schedule. Operation is expected about the middle of this year. Representing an investment of more than $25,000,000, the plant will be capable of a sustained annual production rate in excess of 200,000 tons of kraft containerboard.

Construction began in October 1951 under the direction of Maxon

CONTAINERBOARD MILL of Rome Kraft Co. under construction on the Coosa River near Rome, Ga.; the machine room, machine shop, stores and truck loading dock are in the center foreground

Construction Co. Inc. of Dayton, Ohio. The first concrete was poured in July 1952. The mill itself covers approximately 160 acres, the main building being 666 ft. in length. Sections of the pulp mill are 110 ft. in height, while the smoke stack towers 250 ft. above the ground.

Rome Kraft's water treatment plant has a processing capacity of a daily 20,000,000 gal. Transportation facilities are provided by the Central of Georgia and the Southern Railway System. Approximately 350,000 cords of pulpwood will be procured annually from northwest Georgia and parts of Tennessee and Alabama. The mill operation alone will provide employment for about 650 men and women.

Rome Kraft Co. is owned jointly by the Mead Corp. of Dayton, Ohio, and Inland Container Corp. of Indianapolis.

Nation's Mills Continue Fight Against Stream Pollution

PULP AND PAPER mills throughout the country are stepping up their efforts in the never-ending battle to lick the stream pollution problem. The Lake States—Wisconsin especially—are maintaining their lead in the nationwide fight; with the Pacific Northwest speedily increasing its control research and development program.

Using a process new to the Wisconsin sulfite pulp industry, **Nekoosa-Edwards Paper Co.** has announced that it has completed a series of semi-mill scale tests on a pulping method and chemical recovery process that it hopes will reduce the mill waste disposal problem.

The Nepco process produces sulfite pulp from soda-base—rather than calcium-base—cooking liquor, afterwards recovering chemicals from the spent liquor. The tests were conducted in cooperation with Western Precipitation Corp.

The **Lake States Roadbinder Association** revealed recently that during 1953 Wisconsin sulfite mills increased the use of sulfite roadbinder by more than 40 per cent over 1952 and almost doubled the 1951 consumption. Total quantity of spent liquor applied to road surfaces last year was 43,800,000 gal. More than 3,000 miles of the state's roads are now treated annually.

Consolidated Water Power & Paper Co.'s Interlake mill at Appleton, Wis., is now burning its spent sulfite liquor at full capacity. The firm spent more than $600,000 in the project.

$2,500,000 construction

Progress on construction of **Charmin Paper Mills'** $2,500,000 torula yeast plant in Green Bay, Wis., indicates that it will be in operation by the end of the year. Martin J. Auchter, company vice president, reported that satisfactory progress is being made on the three-phase project. The tunnel phase is nearing completion; the yeast plant phase is well underway, with the foundation and substructure more than half finished and much of the mechanical equipment delivered, while the liquor collection phase is more than 50 per cent completed.

The **Flambeau Paper Co. Div.** of Kansas City Star Co. at Park Falls, Wis., has been ordered by the Wisconsin Water Pollution Committee to submit plans for a mill waste treatment plant by the end of this year; the plant is to be in operation by December 31, 1956.

Pacific Northwest progress

Pollution control developments in the Pacific Northwest during the latter part of 1953 were as follows:

Columbia River Paper Mills Co. has installed a deep-water diffuser-type outfall to secure adequate dispersion of cooking liquor wastes. At **Crown Zellerbach Corp.** in Camas, Wash., a recent conference indicated that the recovery of kraft cooking chemicals is very efficient, and that continuous attempts are being made to increase this efficiency.

The new Everett kraft pulp mill of **Weyerhaeuser Timber Co.** has been so designed that all pulping wastes are discharged into a lagoon and only allowed to escape into the surrounding waters at times when they will receive the greatest dilution. **West Tacoma Newsprint Co.** at Steilacoom has completed the installation of a vacuum-type saveall, which will greatly reduce the loss of fibers.

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East Texas Construction Ahead of Schedule

More than 800 men are now at work on the construction of East Texas Pulp & Paper Co.'s chlorine dioxide bleached kraft market pulp and paperboard mill at Evadale, Texas. The 300-ton per day plant was originally scheduled for operation late this year. However, the current outlook calls for production October 15.

The Beloit Iron Works 216-in. fourdrinier paper machine will be adaptable to a simple change-over from pulp to board production. The operation features a Solvay chlorine dioxide process for bleaching its kraft pulp production.

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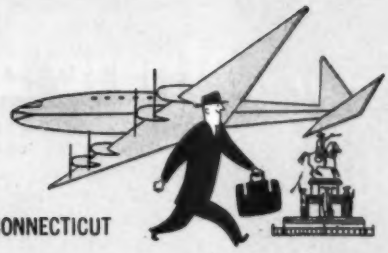
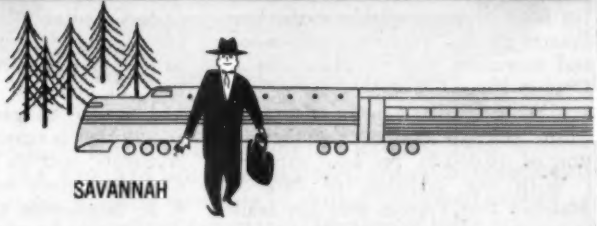
Los Angeles Firm Plans Mill on Pacific Paperboard Site

Mark Andre, Los Angeles manufacturer, has announced the partial purchase of Pacific Paperboard Co. at Longview, Wash. Mr. Andre,





CLOSER . . .

by hours and even days

Every paper mill in the country is now closer to Puseyjones engineering service by hours and even days. A new sales policy has put Puseyjones engineers in the field — at your service 24 hours a day.

Sales engineers who formerly worked out of the home office on special assignment are now assigned to specific territories — *there is one near you.* Their assistance in planning a machine rebuilding program or expediting the delivery of a vitally needed part is yours to command.

This new policy of the 105-year-old Puseyjones organization is evidence of our determination to back up our skill in the design and building of complete fourdrinier and cylinder machines with the finest service in the industry. Next time — put it up to Puseyjones and find out for yourself.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-Making Machinery

Fabricators and Welders of all classes of Steel and Alloy Products

Wilmington 99, Delaware, U.S.A.

WORKMEN install piping that makes up the heating section of Mando's new Fort Frances boiler

New Boiler Installed by Mando at Fort Frances

An additional 50,000 lb. of steam per hour is now available at the Fort Frances, Ont., specialty groundwood and newsprint mill of Minnesota & Ontario Paper Co. The firm recently put into operation a new 100,000-lb. steam boiler to replace a low-pressure unit of 50,000-lb. per hour capacity.

With the addition of No. 4, Mando's Fort Frances mill has available 275,000 lb. of steam per hour from four boilers. The newest unit is part of the company's long-range modernization program that has cost more than $40,000,000 since 1945.

Designed to use Canadian lignite and scheduled to be adapted to burn bark and other wood refuse, the new boiler burns approximately 240 tons of fuel per day. It is a Foster Wheeler Corp. SA unit designed to generate 100,000 lb. of steam hourly at 425 psi and at 590°F. total temperature when burning lignite. When using bark and lignite, the boiler generates 85,000 lb. steam an hour.

The boiler has 621 tubes 2¼ in. in diameter and 110 tubes 3¼ in. in diameter and is equipped with a superheater and Diamond Specialty Power Corp. soot blowers. The unit has four Foster Wheeler Riley model 50 over running spreader type stoker feeders and a travelling grate. The latter is hydraulically driven and is 14 ft. by 17 ft.

Cast iron louvres seal the hopper at the time of ash removal. The boiler also boasts an overfire air system. All combustion air is preheated by a tubular preheater having 612 tubes 2½-in. diameter by 13 ft. in length.

A Canadian Blower & Force Co. forced draft fan supplies 163,000 lb. of air per hour. A Canadian Sirocco Co. Ltd. inducted draft fan removes 182,000 lb. of gas per hour. Fuel and air flow is automatically controlled. Automatic controls are by Baily Meter Co. Refractory work was done by J. R. Stephenson Co.

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owner of Andre Paper Box Co., said he will build a paperboard plant on the site of one destroyed in a $2,000,000 fire January 11, 1952.

The burned out plant was owned by Pacific Paperboard, which received $1,800,000 in insurance money but was prevented by the Reconstruction Finance Corp. from using it to rebuild. The RFC had first claim on the insurance coverage.

•

Coating Methods, Equipment Subject of W. Mich. Course

A series of 12 adult education lectures on "Coating Methods and Equipment" was scheduled to begin March 1 at Western Michigan College, Kalamazoo. According to Dr. Alfred H. Nadelman, head of the paper technology department, technical experts from the East and Midwest are slated to appear.

Remaining lectures are as follows: March 22—"Coating Paperboard by the Champion Process," L. Baxter Chamberlain, general superintendent for Container Corp. of America at Wabash, Ind.; March 29—"The St. Regis Machine Coating System," J. E. Wilber, director of coating research and development for St. Regis Paper Co. at Deferiet, N. Y.

April 5—"The Mead Coating Process," R. H. Savage, vice president of the Mead Corp., Chillicothe, Ohio; April 12—"The Consolidated Coating Process," G. K. Dickerman, technical director for Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; April 26—"The Contracoater (Reverse Roll Coater)," R. J. Jacobs, manager of sales and engineering, Black-Clawson Co., Dilts Machine Works Div., Fulton, N. Y.

May 3—"The Warren Air Knife Coater," Dr. F. H. Frost, research manager, S. D. Warren Co., Cumberland Mills, Maine; May 10—"Fundamentals of Coating Methods," F. W. Egan, president of Frank W. Egan & Co., Bound Brook, N. J.; May 17—"Drying of Coated Paper," George R. Marsh, consultant, Portland, Maine, and May 25—"Supercalendering of Coated Paper," W. O. Wheeler, president, Wheeler Roll Co., Kalamazoo.

•

Rayonier Suit Dropped

A $1,500,000 damage suit brought against the federal government by Rayonier Inc. was dismissed in Seattle recently by U. S. District Judge George H. Boldt. The suit resulted from a 1951 forest fire at Forks, Wash.

The company contended that the government was responsible for the fire that destroyed hundreds of acres of company-owned timberland. Rayonier charged the U. S. Forest Service with negligence. Judge Boldt based his decision on a ruling of the U. S. Supreme Court, which held the government was not responsible for $14,000,000 in claims by citizens of Texas City, Texas, for damages in the 1947 explosion and fire.

•

Trend of Importations Up

October import statistics have shown that the trend of importations of dutiable papers and paperboards is pyramiding, according to a January report by Warren B. Bullock, manager of the Import Committee of the American Paper Industry.

October imports reached a new high value record of $2,770,684 and were 35 per cent higher than the value of imports for October 1952. Imports for the months to October 31 totaled $27,289,298 and were 50 per cent above the figures for the same period in 1952. According to Mr. Bullock, it is even more significant that while the dollar value of imports has increased, the tonnage imported has been at an even higher rate, 67 per cent over the tonnage of the first 10 months of 1952. This indicates, he continued, that the increased imports are due in part to foreign price cutting to place such papers in the U. S. market.

•

Pulp and Paper Literature to be Discussed by ACS Group

Publications in the field of cellulose, abstracting services covering cellulose chemistry, and available bibliographies in the fields of cellulose, pulp and paper will be among the topics discussed at the forthcoming meeting of the Division of Chemical Literature of the American Chemical Society. The group will convene at the Society's 125th national convention at Kansas City, Mo., March 24 to April 1.

Presiding at the symposia on the literature in the field of cellulose

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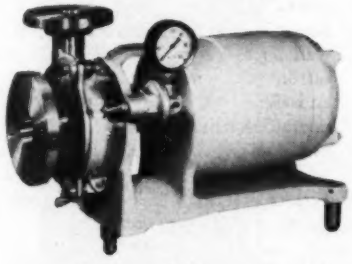

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Tri-Clover Zephyrweld® lightweight welding fittings **are made in tube O.D. sizes from ½″ through 24″ and 36″. Those through 4″ are annealed, pickled and passivated. Larger sizes are annealed, and are passivated on request. Available in all standard fitting types.**

Tri-Clover Schedule 5 and 10 welding fittings **are made in a full line, for use with light gauge *pipe* in sizes from ½″ through 24″ and 36″.**

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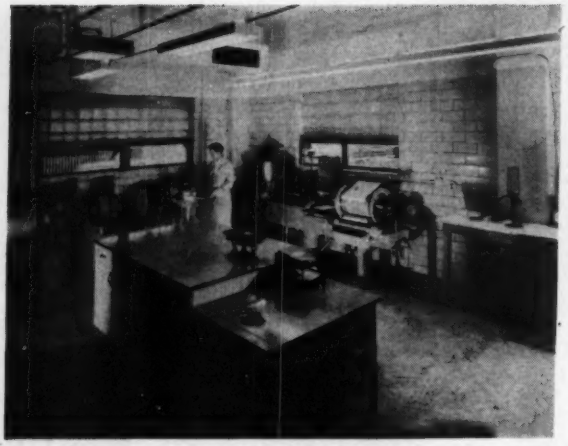

PULP TESTING laboratory at Howard Paper Mills, with James W. Gibson taking samples from a Noble & Wood Machine Co. beater preparatory to making handsheets; note the laboratory rotary for cooking rags for experimental purposes

GROUP CONFERENCE at new lab includes (l to r): Margaret Steele, secretary; L. M. Tyler, chief chemist, and F. L. Kimmel, manager, Aetna Div.; K. P. Geohegan, director; K. M. Grasse, research chemist, and E. W. Petrich, chemical engineer

Howard Paper Mills Triples Laboratory Facilities

The Research and Technical Control Div. of Howard Paper Mills Inc. has moved into new and larger quarters in space recently erected at the Aetna Paper Div. mill in Dayton, Ohio.

The new laboratory is "one of the most modern in the industry," according to K. P. Geohegan, director of research and technical control. He pointed out that the enlarged facilities and new equipment are part of a long-range improvement and expansion program.

The laboratories are located on two floors, with a controlled humidity room and individual air conditioning systems on each floor. In addition to general paper research and new product development, the labs supervise all quality control over pulp supply, rag supply, paper in production, and finished paper. Control tests at the paper machines are reported to the lab.

The Dayton operation serves as a central laboratory for all Howard mills, supplementing the separate units maintained at the Howard Paper Div. in Urbana, and the Maxwell Paper Div. in Franklin.

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and its related materials will be Dr. Harry F. Lewis, dean of the Institute of Paper Chemistry in Appleton, Wis. During the morning sessions papers will be presented by Dr. W. M. Hearon of Crown Zellerbach Corp.; Dr. Curtis L. Brown of the National Research Council; Dr. E. C. Jahn of the New York State College of Forestry, Syracuse, and Dr. Jack Weiner, editor of the Institute of Paper Chemistry.

Other speakers will include Dr. L. F. McBurney and Dr. Herman Skolnik of Hercules Powder Co.; G. J. C. Potter of the Pulp and Paper Research Institute of Canada, and Dr. E. J. Crane, editor of *Chemical Abstracts*.

•

Container Corp. Announces Formation of Venezuela Firm

A new company has been formed in Venezuela under the title of Corrugadora de Carton, S. A. The fully subscribed capital is approximately $900,000. The announcement was made by Walter P. Paepcke, chairman of the board of Container Corp. of America.

Carton Internacional, S. A., a wholly owned Container Corp. subsidiary, owns half of the capital stock; the remainder is Venezuelan capital. A contract has been let for the construction of a plant at Maracay to house the most modern equipment for the production of corrugated shipping containers.

•

Crown Zellerbach Plans New California Paper Mill

Crown Zellerbach Corp. has announced the purchase of 42 acres of industrial property at East Antioch, Cal., for the erection of a paper mill to serve the San Francisco Bay area.

The proposed mill would produce paper from kraft pulp available from various sources. Among these are a possible kraft mill at Duncan Bay on Vancouver Island, British Columbia. Such a plant would be the second unit of Elk Falls Co. Ltd. The first is a newsprint mill constructed two years ago by the Canadian subsidiaries of Crown Zellerbach.

•

Federal Paper Board Forms Subsidiary

Federal Paper Board Co. Inc. has announced that all its folding carton operations are being integrated under the name of a newly organized subsidiary, National Folding Box Co. Inc., a New York corporation.

The new company has assumed all the assets and liabilities of the newly acquired National Folding Box Co. of New Haven, Conn., as well as those of Federal's four other carton subsidiaries. These companies and the plants at New Haven will be operated as divisions of the New York firm, which will be able to convert into folding cartons 45 per cent of Federal's paperboard production capacity of 225,000 tons.

•

Man-Caused Fires Drop 14%

Man-caused fires on national forests dropped 14 per cent during 1953, the United States Department of Agriculture announced recently. In 1952 they amounted to 7,001, dropping to 5,960 in 1953. However, the total number of blazes remained about the same—11,950 in 1953 as compared to 11,955 in 1952.

According to the U. S. Forest Service, the decrease in man-caused fires last year was largely because of the nation's increased awareness of the forest fire danger; such awareness was largely the result of the Smokey Bear forest fire prevention campaign conducted by state and federal forest services under the

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In addition, you receive the added value of AMERCOAT's conscientious service follow-through backed by an organization SPECIALIZING in industrial corrosion control. With the assistance and on-the-spot advice of a trained representative, you get the best possible application through proper attention to surface preparation and correct coating techniques.

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Paper Industry News Notes

A rebuilding program costing between $3,000,000 and $4,000,000 is now nearing completion at **D. M. Bare Paper Co.'s** mill in Roaring Spring, Pa. The plant was virtually destroyed by fire in 1951 . . . . **Allied Paper Mills'** King Div. has announced an expansion of production facilities for base stock photographic paper at Kalamazoo, Mich. Included in the air-tight structure will be a highly specialized coating machine, a new supercalender stack and a rewinder suited to the high degree of inspection and cleanliness involved.

Hudson Pulp & Paper Corp. will construct an 80,000-sq. ft. extension of its converting room at Palatka, Fla. The two-story structure will cost more than $150,000 . . . . **Fleishhacker Paper Box Co.** will construct a $750,000 plant in San Leandro, Cal., for the manufacture and distribution of folding cartons and set-up boxes . . . . **Consolidated Water Power & Paper Co.** has completed a $175,000 addition to its offices at Wisconsin Rapids, Wis. . . . **National Container Corp.** has announced that a new box plant will be opened in Detroit . . . . **Carolina Paper Mills Inc.** of Rockingham, N. C., has announced the opening of its new warehouse at Roanoke, Va.

Canada Glazed Papers Ltd. is building a 90,000-sq.-ft factory and office structure in a Toronto suburb. A $50,000 polyethylene extruder machine will produce moisture-proof material used in bags for cement, lime, and fertilizer . . . . **New Brunswick International Paper Co.** has purchased the Dalhousie steam plant and substation owned by Gatineau Power Co. The plant has an installed capacity of 9000 hp . . . . **A. Kimball Ltd.,** Toronto paper converters, printers and specialists in the field of product identification, is constructing a 60,000-sq.-ft. factory building. The firm is a wholly owned subsidiary of A. Kimball Co. of New York, N. Y.

National Container Corp. has announced that the name of its Ohio subsidiary has been changed from the Jaite Co. to National Container Corp. of Ohio.

U. S. Paper and Paperboard Production

	Dec. 1953 (tons)	Nov. 1953 (tons)	Dec. 1952 (tons)	Total 1953* (1,000 tons)	Total 1948 (1,000 tons)
Paper and Board, total	2,022,226	2,185,835	2,022,585	26,566	22,049
Paper, total	927,989	949,280	888,682	11,387	11,195
Newsprint	88,299	91,571	88,492	1,065	866
Groundwood paper (uncoated)	66,257	61,685	60,909	782	837
Printing and converting (coated)	97,394	102,591	95,251	1,182	
Book paper (uncoated)	125,977	131,797	128,487	1,630	2,284
Fine paper (writing, cover and text, bristols, thin paper and other)	104,122	106,106	95,799	1,280	1,157
Coarse paper (unbleached kraft, glassine, greaseproof, vegetable parchment and other)	279,265	290,817	259,194	3,422	3,143
Special industrial paper	35,395	31,849	34,358	411	318
Sanitary tissue stock	102,728	102,763	96,189	1,255	963
Tissue paper	17,611	19,700	18,054	233	230
Absorbent paper	10,941	10,401	11,949	128	109
Paperboard, total	902,473	1,020,505	923,947	12,307	9,441
Container board, total	481,823	573,922	505,465	6,740	5,042
Liners	317,657	397,799	337,760	4,541	3,347
Corrugating material	142,091	154,473	144,003	1,873	1,376
Container chipboard	22,075	21,650	23,702	326	319
Bending board	275,294	288,697	259,613	3,552	2,153
Non-bending board	63,935	73,032	65,254	936	597
Special paperboard stock	75,038	78,879	88,773	990	1,568
Cardboard	6,383	5,975	4,842	88	80
Wet machine board, total	11,986	10,494	12,175	155	140
Construction paper and board, total	179,778	205,556	197,781	2,718	2,561
Construction paper	85,158	96,752	88,406	1,317	1,288
Hardboard and insulating board	94,620	108,804	109,375	1,401	1,273

(*) Preliminary report. *Source: U. S. Department of Commerce.*

Coming Events

TAPPI

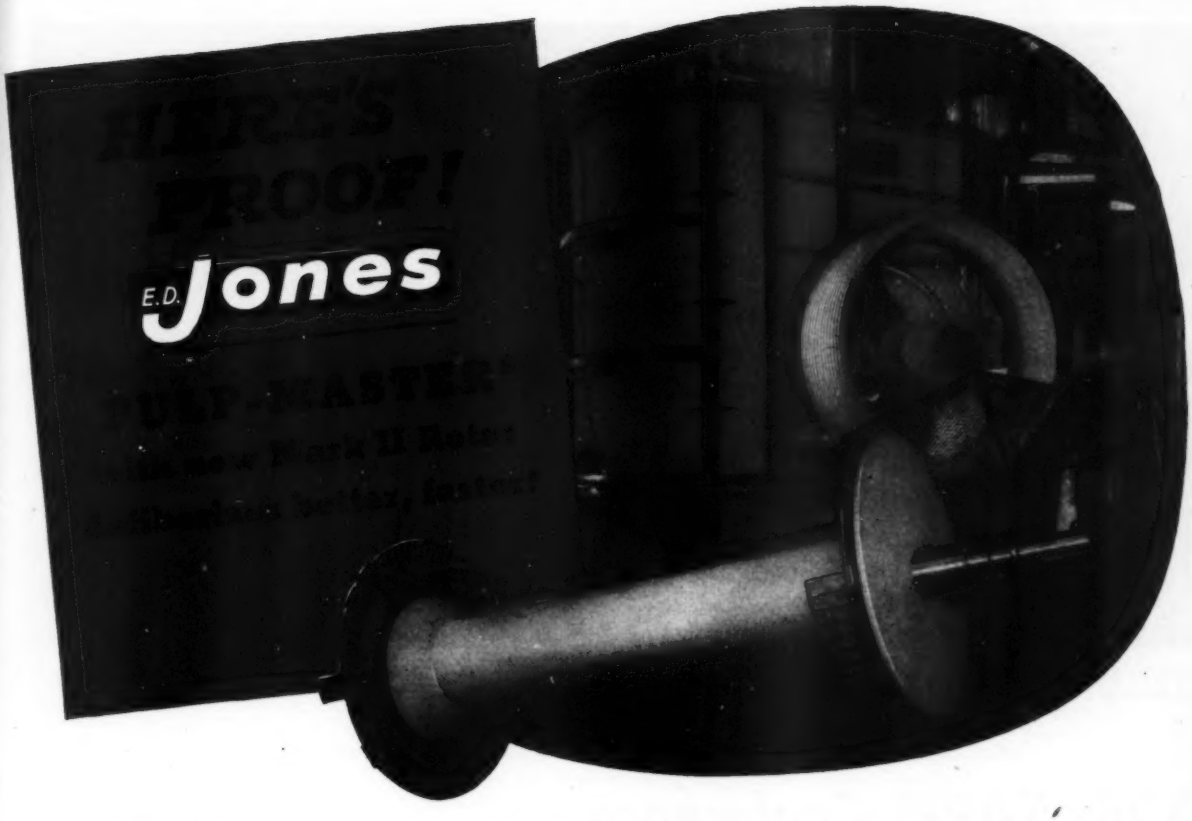
March 19—Pacific Section, West Linn, Ore.
March 19—Southeastern Section, George Washington Hotel, Jacksonville, Fla.
March 25—Delaware Valley Section (Odor Problems in Packaging), Engineers' Club, Philadelphia
April 8—Ohio Section (New Starch Developments), National Starch Products Inc., Indianapolis
April 13—Lake States Section, U. S. Forest Products Laboratory, Madison, Wis.
April 22—Delaware Valley Section (Automation in the Pulp and Paper Industry), Engineers' Club, Philadelphia
May 11—Lake States Section, annual social meeting, Butte des Morts Club, Appleton, Wis.
May 11—Ohio Section, annual meeting, Hartwell Country Club, Cincinnati
May 14—Southeastern Section, Hotel De-Soto, Savannah, Ga.
May 20-21—Pacific Section (joint meeting with Pacific Coast Superintendents), Gearhart Hotel, Gearhart, Ore.
May 26-27—Fifth Coating Conference, Poland Spring House, Poland Spring, Maine
Sept. 21-24—Fundamental Research Conference (Fundamentals of the Paper Machine), Appleton, Wis.
Oct. 18-21—Ninth Engineering Conference, Philadelphia

American Pulp & Paper Mill Superintendents Association

March 25—Miami Valley Division, American Legion Hall, Middletown, Ohio
April 20—Miami Valley Division, American Legion Hall, Middletown, Ohio
May 6-7—Northwestern Division, Leamington Hotel, Minneapolis
May 14-15—Pennsylvania-New Jersey-Delaware Division, Yorktowne Hotel, York, Pa.
May 20-21—Pacific Coast Division (joint meeting with Pacific Section TAPPI), Gearhart Hotel, Gearhart, Ore.
June 4—Miami Valley Division, Orr Felt & Blanket Co., Piqua, Ohio
June 21-23—National Meeting, Sheraton-Mount Royal Hotel, Montreal, Que.
Sept. 2-4—New York-Canadian Division, Saranac Inn, Upper Saranac Lake, N. Y.
Sept. 23-25—Northeastern Division, Poland Spring House, Poland Spring, Maine
Oct. 1-2—Pennsylvania-New Jersey-Delaware Division, Bedford Springs Hotel, Bedford Springs, Pa.

Other meetings

March 20-24—Envelope Manufacturers Association of America, spring meeting, Hollywood Beach, Fla.
March 29-31—National Paper Trade Association, annual convention, Waldorf-Astoria Hotel, New York, N. Y.
April 3-4—Packaging Machinery Manufacturers Institute, spring meeting, Hotel Dennis, Atlantic City, N. J.
May 2-6—Electrochemical Society Inc., La-Salle Hotel, Chicago
May 5-7—American Society of Training Directors, 10th annual conference, Schroeder Hotel, Milwaukee



"The results are as good as any we could wish for," says the production manager of a mill making sulphite and sulphate bonds. "We've reduced the horsepower hours for pulping bond broke from 187 to 60."

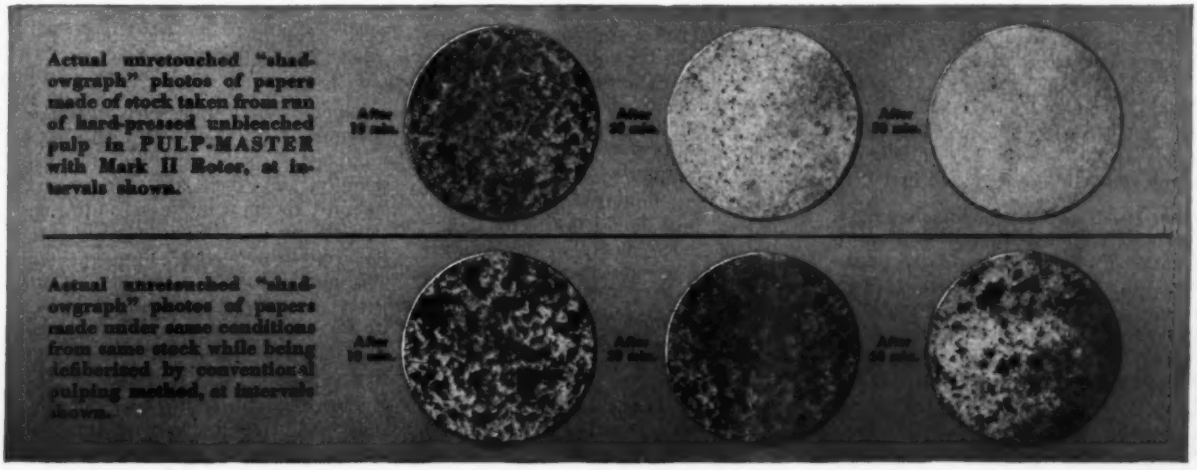
The slides tell the story. Taken from an actual run, under mill conditions, they graphically demonstrate the superiority of the Pulp-Master with the new Mark II rotor over conventional pulping methods.

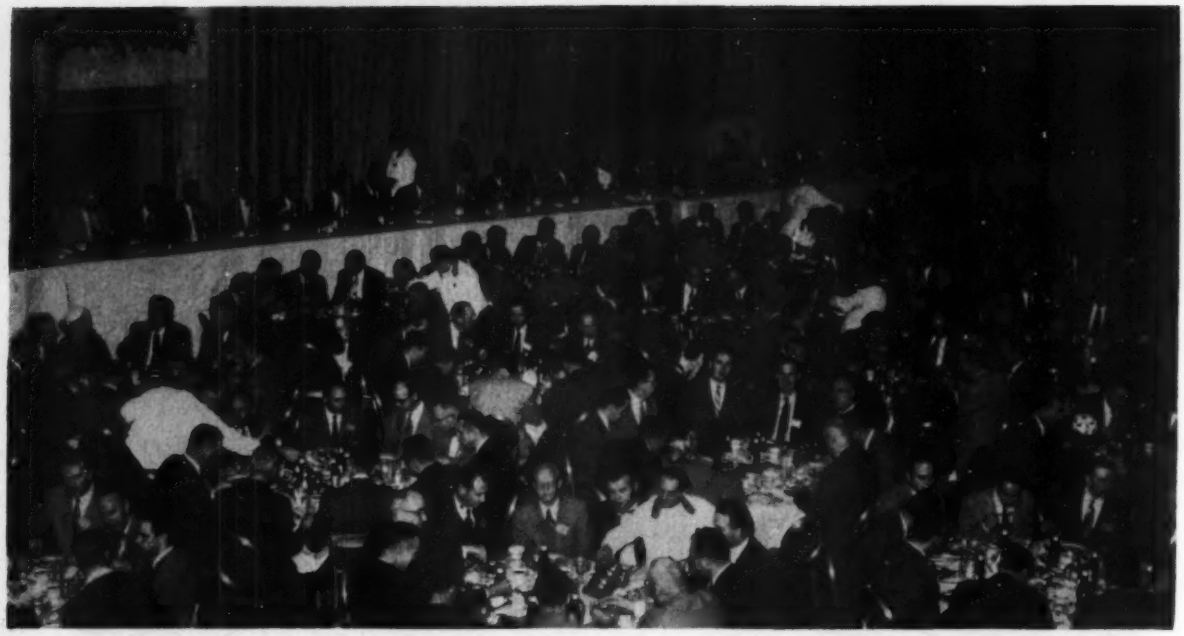
The Pulp-Master is equally effective on baled pulp, broke, bagasse, waste paper or other material. Ask your Jones representative — or write direct for details.

E.D. Jones

E. D. JONES & SONS COMPANY
Pittsfield, Mass.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY


Actual unretouched "shadowgraph" photos of papers made of stock taken from run of hard-pressed unbleached pulp in PULP-MASTER with Mark II Rotor, at intervals shown.
Actual unretouched "shadowgraph" photos of papers made under same conditions from same stock while being defiberized by conventional pulping method, at intervals shown.



GRAND BALLROOM of the Hotel Commodore during the annual TAPPI luncheon, at which the guest speaker was George Olmstead Jr., president of S. D. Warren Co.

39th TAPPI Conference

— marks a year of accelerated technical progress

OPENING THE GENERAL SESSION, George H. Pringle, reelected president of TAPPI, urged industry to attract and train more technical men, since technical training has been recognized as a good background for top operating and administering positions.

Mr. Pringle outlined the 12-month training program given to young technical men upon joining the Mead Corp. One of the requirements of the Mead training program is the preparation of reports by the trainees at the end of the course.

In his annual report, R. G. Macdonald, secretary of TAPPI, stated that total TAPPI membership now stands at 6025, with 629 individual members having been elected in 1953.

TAPPI Medal awarded to Nicholson

The TAPPI Medal was awarded to Gunnar W. E. Nicholson, vice president in charge of manufacturing, Union Bag & Paper Corp., at the Association's annual luncheon. The medal was presented by Karl O. Elderkin, Bowaters Southern Paper Corp.

Another highlight at the luncheon was the inspiring address made by George Olmsted Jr., president of S. D. Warren Co. By way of charts he showed that between 1924 and 1954 the population of the U.S.A. had increased 44 per cent, consumption of paper and paper products 240 per cent, and pulp and paper industry profits 325 per cent. Mr. Olmsted strongly urged industry to see to it that these curves continue to rise, which could be achieved through

1. improved merchandising techniques which would undoubtedly expand the market for paper products.
2. lowering the cost of manufacturing; in this connection he mentioned the need for an additive to give synthetic strength to paper and paper products;
3. developing new and improved products and finding applications for cellulose; we should learn to think more of our industry as a chemical rather than as an engineering operation, and
4. recognizing technical leadership as the most important asset of the pulp and paper industry.

Technical papers at the general session

Discussing fiberglass as a papermaking material, Thomas S. Chambers, Owens-Corning Fiberglass Corp., said that preparation of papermaking stock from blown fiberglass is best carried out by very light beating at a consistency not over 0.5 per cent and at pH3. Mechanical damage to fiberglass must be avoided at all stages of operation. The addition of a limited quantity of chipped drawn fiberglass to blown fiberglass and to beaten cellulose improves tear and tensile strength of the sheet. Among the non-fibrous binders meriting special mention, he listed polivinyl acetate, butadiene copolymers, phenolics, polyacrylates, and silicones.

Papers containing appreciable amounts of fiberglass, Dr. Chambers continued, show superior thermal stability, long shelf life, dimensional stability, chemical inertness, and filtration efficiency. They are used in electrical appliances, plastic impregnation, and high-efficiency filtration. There is also a possibility that mill productivity may be increased due to improved drainage and drying characteristics of papers containing fiberglass.

The importance of expanding the pulp and paper industry in some of the countries of the Far East, as a

George Olmstead Jr., speaker at luncheon

George H. Pringle, reelected to the presidency

G. W. E. Nicholson accepts the TAPPI award

positive advance toward greater overall security, was urged by Roland A. Packard of Washington, D. C. He presented some interesting comparisons of per capita paper consumption in a number of countries as follows: U.S.A. — 395 lbs.; Japan — 35 lbs.; Indo China — 0.7 lbs.; Thailand — 2.8 lbs.; China — 2 lbs. As an item of interest, the world's largest bagasse pulp mill is located in Formosa, he said.

R. S. Aries presented a film and introductory comments on the continuous manufacture of board by a dry process. A paper by Reavis C. Sproul, Herty Foundation, entitled "A Laboratory to Coordinate Science and Manufacturing Operations" was read by title only.

Digester corrosion

Reporting on the history and performance of 100 carbon brick linings installed in alkiline pulp digesters during the last 23 years, Beaumont Thomas, Stebbins Engineering & Mfg. Co., observed that, with the improvement and the development of different grades of carbon brick, digester life periods of 12 to 17 years are now obtainable. Should improved mortar joint materials become available, these periods undoubtedly could be further increased. Mr. Thomas also disclosed that the thicker linings (linings vary in thickness between 2½ to 5 in.) had proved to be much more effective.

John W. Hassler, West Virginia Pulp & Paper Co., reported that corrosion experiments conducted in glassware and in laboratory steel digesters show that corrosion can be minimized by establishing a passive surface on steel and then providing conditions to keep the surface passive. Thus the presence of polysulfides results in a stablized steel surface, while traces of nascent hydrogen leads to accelerated corrosion. In straight kraft pulp digesters, the corrosive action of white liquor is minimized as a result of the following conditions:

(1) Wood chips reduce the concentration of active chemicals, (2) chemical concentration is diluted when direct steam heat is used, and (3) black liqour constituents aid in stabilizing an inert steel surface.

E. W. Hopper and J. N. Morrison grouped digester corrosion variables into three distinct classifications: (1) variables in chemical analysis and physical characteristics of carbon steel; (2) variables in white liquor composition insofar as they affect the corrosion of different types of steel; and (3) the effect on corrosion rates of protective films build-up on the steel by cathodic protection.

The two other papers on digester corrosion were entitled "Field Investigation of Corrosion in Alkaline Pulping Equipment" by C. P. Christianson, Pulp and Paper Research Institute of Canada, and "Bibliography on Alkaline Digester Corrosion" by R. T. Whitney and S. J. Baisch, Institute of Paper Chemistry.

Papermaking on the fourdrinier

A beta ray scanner has been used in research at Southland Paper Mills Inc., it was reported by J. D. Sadtler and H. Borofsky, to measure fiber weight distribution across the sheet of paper. This has made it possible to make certain machine adjustments and design a better headbox. Paper quality and machine efficiency is improved generally. The scanner has also been used to establish wear patterns for machine clothing, and its latest application is in the analysis of wear on the fourdrinier wire.

The paper presented by W. Rauskolb, Industrial Nucleonics Corp., stresses the necessity of taking successive basis-weight profiles over the full web width for accurate and effective basis-weight control.

John C. Harper and T. A. McArn, Downingtown Mfg. Co., described a load meter which provides simple and accurate means of measuring, recording, and controlling press roll loading. The load meter employs the principle of the Wheatstone bridge circuit to detect minute variations in the stress on a steel column. Variations of the load meter have been employed to measure felt tension, refiner thrust loads, and fourdrinier wire tension.

Well-planned consistency regulator installations were illustrated by David DeZurik, DeZurik Shower Co., ranging from the initial stages of pulp production through bleaching, screening, stock preparation and to the final point of control ahead of the paper machine.

J. J. Erving, *et al,* National Bureau of Standards, showed that the tensile strength of paper made entirely of glass fiber can be increased to more than 300 psi if the beating is conducted at 85° F. and the pH adjusted to 3.5 or less with sulphuric acid.

J. C. Barthel, *et al,* American Cyanamid Co., reported a new sizing agent, the salt of a hydrophobic polyfunctional amine, which is effectively retained by fiber to the extent of about 70 per cent. The new sizing agent can be used to size neutral and alkiline papers, including calcium carbonate filled papers. Among the outstanding properties of paper sized with this chemical are: (1) high resistance to the penetration of writing ink and alkaline solutions; (2) reduced tendency to curl when the paper is wetted on one side; (3) improved resistance to color degradation on exposure to ultra-violet light, and (4) improved resistance to butyl carbitol penetration.

Studies of rosin sizing by means of autoradiography and the electron microscope, discussed by Charles W. Hock, Hercules Powder Co., support the view that rosin sizing does not cover the fibers smoothly in a continuous film but rather irregularly in the form of discrete particles.

Other papers on papermaking included: (1) An experimental study of factors in the manufacture of paper

PRESENTATION OF Tappi gold medal to G. W. E. Nicholson (right), executive vice president of Union Bag & Paper Corp.; making the award is Vice President Karl O. Elderkin of Bowaters Southern Paper Corp.

G. W. E. Nicholson Receives TAPPI Gold Medal for 1953

Gunnar W. E. Nicholson, executive vice president of Union Bag & Paper Co., was the recipient of the 1953 TAPPI gold medal. The award was made during the annual luncheon of the Association at the Hotel Commodore. It is presented each year for outstanding contribution to the paper industry.

In his acceptance speech, Mr. Nicholson praised the work of TAPPI toward greater integration in the industry. "It may be timely and proper," he said, "to stress briefly the need of extending such integration beyond our woodyards and plants and into the forests with the idea in mind of devising ways and means of not only producing greater numbers of higher quality trees but harvesting them more economically.

". . . Our failure to utilize technical knowledge in the woods to the extent that we do in our plants is evidenced by the fact that of all trees harvested, only half of the total volume is converted into finished products. . . . Present product research and development activities should be extended and in many cases combined with those of forestry research. I believe that in the future woodlands operations, whether they pertain to the productivity of land, the harvesting and transportation of pulpwood or the utilization of sawmill waste, must be organized and managed in much the same manner as we today operate our pulp and paper mills."

A native of Sweden and a graduate chemical engineer, Mr. Nicholson began his career in the United States industry 33 years ago as superintendent of Poland Paper Co. in Mechanic Falls, Maine. He was later associated with both Bogalusa Paper Co. and International Paper Co.

He came to Union Bag & Paper in 1941 as resident manager at Savannah, Ga. In 1946 Mr. Nicholson became a vice president of the firm and in 1952 was named to his present position. A member of TAPPI since 1921, he was president in 1946.

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yarn and (2) Mechanical properties of paper, both by Geoffrey Broughton and James P. Wang; (3) The coordinated role of alum in the sizing of paper, by R. M. Karapetoff Cobb and D. V. Lowe; (4) An investigation of methods for dimensionally stabilizing papers, by F. W. Lorey and C. E. Libby; and (5) Film-weaving Wisconsin wires, by J. E. Watson, Wisconsin Wire Works.

Acid pulping

William H. Hoge, Oxford Paper Co., attributed the difficulty in the sulfite pulping of Douglas fir to the slow rate of lignin removal, thus allowing the bisulfite decomposition reactions to form large amounts of sulfuric acid which precipitates the base as calcium sulfate.

The panel discussion on acid pulping included (1) The use of bases other than calcium in the sulfite process, namely sodium, ammonium, and magnesium — discussing heat and chemicals recoveries and the relative costs of these bases — by R. S. Hatch, Hudson, Pulp & Paper Co.; (2) Pulping hardwoods and highly resinous softwoods, by G. H. McGregor; (3) 65 per cent yield for newsprint furnish obtained by breaking down the softened chips in Sprout, Waldron & Co. Inc. refiners and processing them in Curlators, by L. R. Beath, Rice Brothers & Co. Ltd.; (4) Three papers dealt with stream pollution problems in sulfite pulping. They were by Vance P. Edwardes, H. R. Amberg, and M. L. Malcove.

Corrugated containers

A symposium on heat balance and its effect on corrugated board included six papers entitled (1) Modern condensate drainage for corrugators, by R. J. Lundrigan, Cochrance Corp. (2) Detrimental effects of either excessive or insufficient heat on corrugated starch board, by C. R. Vander Meulen, Penick & Ford Ltd. Inc.; (3) The conventional steam trap system, by C. D. Nitchie, Samuel M. Langston Co.; (4) Heating with hot oil, by R. Caspar Swaney, Mountain State Fabricating Co.; (5) Thermal balance with silicate adhesives, by R. L. Kreyling, Philadelphia Quartz Co., and (6) The Role of the steam system in corrugating, by Paul Harrison, Velocity Speed Production Engineering.

Pulp purification

Considerable improvement in the bleach response of sodium peroxide in the last bleaching stage has been achieved by means of an acid post-treatment to the preceding hypochloride stage, it was reported by Willard F. Schroeder and John R. Seferian, National Distillers Chemical Corp. The use of this process permits production of bleached kraft pulps in the mid-80's, with superior brightness stability and strength properties. According to the authors, this new process is readily adaptable to most existing multi-stage bleacheries, which are using only hypochlorite and alkaline extraction treatments in the last stages of the bleaching process.

Merrill A. Millett, *et al*, U. S. Forest Products Laboratory, described chromatographic techniques in the analysis of pulps. The authors report satisfactory agreement between the chromatographic and the TAPPI

method at high pentosan contents but noticed appreciable inherent errors of the TAPPI method when used at low pentosan content. This is explained by the fact that residual unhydrolyzed cellulose contains relatively large amounts of pentason.

W. R. Rapson, Department of Chemical Engineering, University of Toronto, presented a comparative study of six processes for generating chlorine dioxide in pulp mills. The comparison was the result of a study of operations in 12 chlorine dioxide plants.

The Kesting process, Dr. Rapson continued, requires an electrolytic plant for the manufacture of sodium chlorate in addition to the chlorine dioxide generator and involves therefore a high capital investment. The Persson process — involving two coupled continuous cyclic processes, one reducing chromic acid to chromic sulfate and the other reducing sodium chlorate with chromic acid — requires the next highest capital investment. Considerably less capital investment is involved in the Solvay, Holst, Mathieson, and C.I.P. processes, the equipment costs of which probably differ by less than 20 per cent if adequate storage facilities and instrumentation are provided in each case.

A comprehensive study of bleaching with chlorine dioxide was presented by W. D. Harrison, Riegel Paper Co.

Testing

A successful dye staining technique for the identification of wet strength resins in paper was described by R. R. House and N. T. Woodberry, American Cyanamid Co. The method permits positive identification of paper treated with a melamine resin. Some types of urea resins can also be identified by this method, while with other urea resins and protein materials supplementary tests may be necessary to help differentiate between them.

D. J. MacLaurin and F. A. Aflenzer, the Institute of Paper Chemistry and the Austrian Institute of Pulp and Paper Technology respectively, described a method permitting the prediction and calculation of brightness values of groundwood-sulfite pulp mixtures.

L. M. Lyne and W. Gallay, E. B. Eddy Co., described an improved method for the measurement of wet web strength. They showed typical stress-strain curves for groundwood, wood pulps, and synthetic fibers and interpreted the results.

Accelerated biological oxidation

F. W. Bishop described the Southland Paper Mills, installation of the full mill-scale treatment plant employing the aeration process for accelerated B. O. D. reduction of kraft mill wastes. In this process the waste is exposed to sufficient quantities of diffused air in the presence of acclimated bacteria, and nitrogen is added to sustain the activity of the seed.

Alkaline pulping

W. H. Tock, Allis-Chalmers Mfg. Co., discussed factors influencing the selection of modern rotary lime recovery kilns. The rotary kiln was first used in the pulp and paper industry in 1920, and at the present there are approximately 100 rotary kilns in operation in United States and Canadian pulp mills, he said. Because of its ease of operation and high capacity, the rotary kiln remains the most feasible and economical lime sludge recovery unit.

W. J. Nolan and G. R. Kulkarni, University of Florida, presented a detailed study of black liquor recovery, with emphasis on the evaporation load and salt cake recovery which might be expected in a continuous alkaline pulping installation. They derived equations which permit the calculation of the consistency of the blow, concentration of black liquor recirculated, concentration of black liquor to the recovery system, and sulfate losses. Two other series of calculations developed involve vacuum filter washing and screw press washing. The results show that continuous pulping at a constant concentration of 20 grams per liter can be accomplished by the same over-all evaporation load as for batch cooking under present day commercial conditions. When continuous pulping at high concentration (80 grams per liter) is involved, the evaporation load increases about 12 per cent.

K. J. Brown, Forest Products Laboratory, discussed the effects of bark in sulfate pulping of a northern oak mixture. The chips used contained up to 24 per cent bark by weight, and the results showed that the presence of bark caused (1) a decrease in pulp yield per digester charge but an increase in pulp yield yer cord of rough pulpwood; (2) a greater consumption of active chemicals; (3) a decrease in pulp brightness, and (4) a decrease in the strength properties of the pulp.

Two mixtures containing 0 and 16 per cent bark were cleaned in a centrifugal cleaner and then bleached to a brightness of 82 per cent. There was no noticeable difference in appearance between the two pulps, but a 3 per cent bleached pulp increase was obtained from the mixture containing 16 per cent bark when calculated on the basis of rough unbarked pulpwood.

Paper Week Sidelight: Economist Addresses First Annual Executive Seminar

Recovery, if not expansion, is in prospect for 1954, according to Dr. Martin R. Gainsbrugh, chief economist for the National Industrial Conference Board. He insisted that the business downtrend that began in mid-1953 warrants the label of "recession" and not rolling readjustment," which some have applied to it.

Dr. Gainsbrugh was a participant in the First Annual Eastern Seminar for Executive in the Paper Industry, which was staged in New York February 15-18. Sponsored jointly by the Graduate School of Business Administration of New York University and the Paper and Twine Association, the sessions are to be held each year during the national APPA and TAPPI meetings.

Since mid-1953, Dr. Gainsbrugh explained, the physical outpouring of the nation's factories and mines has continued to move down unbrokenly.

The speaker warned that "even with a successful conclusion of inventory liquidation, we may not automatically get expansion of markets for both capital and consumer goods in 1954."

Industry represented

The seminar faculty, in addition to NYU professors, included representatives from industry, who discussed such subjects as distribution, inventory practices, organization, cost problems, credits and collections, merchandising, etc. Among the industry men appearing were: Herbert C. Altholz, president of Inlander-Steindler Paper Co.; George Austin, general sales manager for Lily Tulip Cup Corp.; Morris C. Dobrow, executive secretary of the Writing Paper Manufacturers Association; S. W. Franklin, director of merchandising for Hudson Pulp & Paper Corp.; Harry E. Gould, president of Reinhold-Gould Inc.; S. T. Jones Jr., president of Hudson Valley Paper Co.

Emanuel Katz, president of Doeskin Products Inc.; W. G. Leathers, assistant vice president of Hubbs Corp.; Alfred E. MacAdam 3rd, president of A. E. MacAdam & Co. Inc.; Raymond F. Marcus, merchandise manager of Doeskin; Charles V. Morris, sales and advertising assistant to the president, Henry Lindenmeyr & Sons Div. of Hubbs Corp.; John L. Richey, executive secretary of the Paper and Twine Association; Martin D. Schwartz, president of Schwartz Paper Co.; Jack Sonneveldt, president of the Sonneveldt Co.; Arthur H. Stein, vice president of Yorkville Paper Co., and Robert S. Vosmer, general credit manager for Sabin Robbins Paper Co.

APPA covers problems of an industry in transition

There's a tremendous difference between a tornado and a cloudy sky. In the opinion of the paper industry's financial weather forecasters, the worst that can be anticipated for 1954 is a somewhat cloudy sky and not even a light rain storm.

This is apparently the industry judgment as expressed in various quarters during the annual convention of the industry at the Waldorf-Astoria, New York, the week of February 15.

The most gloomy forecast is for a drop of not over 7½ per cent in tonnage output in 1954 as compared with 1953. And this, it was pointed out at the same time, is a normal readjustment after 1953, which was the record production year in the industry's history. It is axiomatic in the paper industry that its advance is reasonably steady, with a slight readjustment after every record production year.

At the American Paper & Pulp Association's open forum, Retiring President Sydney Ferguson took an optimistic view of the prospects. He said this was no time for pessimism, and that 1954 will be one of the industry's really big years. He added that active selling will neutralize all the talk of a doubtful year to come. E. W. Tinker, executive secretary of APPA, at one of his appearances before the group associations, expressed the thought that the gloom being peddled about the nation is fostered by political hopes of a difficult business year, which would bring the "outs" back to federal power. In this tone, many speakers took the view that prophets of doom were hoping for what is not likely to happen.

Not a rolling readjustment

On the other side of the picture, Martin R. Gainsbrugh, chief economist for the National Industrial Conference Board, told the Paper and Twine Club Seminar that the present downward trend is a definite recession and not a "rolling readjustment." His forecast is based on economic studies, and he cannot be grouped as one of the "gloomsters" in the political arena. John H. Vogel, economist of the Association, told another group that the industry would, as in 1949, successfully negotiate the anticipated readjustment, due to the end of the struggle in Korea. He warned against a "hopped-up economy" by national deficit financing.

A week of meetings, over 90 in all, including committee sessions, was given a double climax by the open industry meeting and the closing banquet at which Gov. Sherman Adams, assistant to President Eisenhower, was the principal speaker. Every one of the 90 meetings was a business story in itself. Little can be done other than to give a brief glance at the highlights of the week.

In Governor Adams the industry had a speaker who could talk its own language. Coming up from the pulpwood forests, through executive control of a New England paper manufacturing company, to the governorship of New Hampshire, and then to the top spot in Mr. Eisenhower's personal entourage, Governor Adams talked paper, but more than that rephrased the present Administration's program of taking government back to the people.

"The President," he said, "is not trying to expunge the New Deal or to project it. He is taking off from the facts of life in the United States, A. D. 1954, and going on from there to outline, in a new tone of confidence, a new course. The Administration is committed to getting the government off the backs of the people, and to make the most of America, not the most of government."

Governor Adams spoke at the annual banquet of the Association at its 77th meeting. Earlier, an open industry meeting, which has become an annual convention fixture, brought to the platform four industry leaders, discussing various phases of the industry's multifarious problems.

Hopes for steady growth

Presided over by the new association president, Donald S. Leslie, president of Hammermill Paper Co., the retiring president, Mr. Ferguson gave his review of the year, with his encouraging hopes for a steadily growing and increasingly prosperous life for the industry.

James T. Sheehy, executive vice president of Rayonier Inc., an expert in the field of safety in the mills, said that the paper industry has lagged behind many other industries in the incidence of injuries in its mills, but that there had been a great advance in this respect over previous years. He said safety was a problem of management, and the lower the incidence of injury, the greater the gain in output, and that safety was not, therefore, a health problem alone, but an economic necessity.

Mortimer E. Graham, secretary of Hammermill Paper Co., spoke on the developments in the field of tariff legislation on the basis of his work as chairman of an industry task committee to present the industry's views to the Randall Commission on foreign economic policy. He said that the tariff section of that report took cognizance of the industry's recommendations, and while not entirely suitable to the proponents of an extreme foreign trade liberalism, was in the main an approval of the paper industry's position. He foretold difficulty in Congress when legislation is proposed, because of the attitude of the more conservative members of Congress. However, he emphasized that the Randall Commission has given full recognition to the industry's argument that there should be a complete and thorough study of the entire broad tariff problem. He urged that every effort be made in any future trade agreements to have them negotiated on a basis of actual, not nominal, reciprocity with other participating nations.

Benefit not to labor alone

The concluding speaker on the program was Reuben B. Robertson Jr., president of Champion Paper & Fibre Co. Mr. Robertson had just been elected first vice president, a step often followed eventually by advancement to the Association presidency. Mr. Robertson devoted much of his talk to pending labor legislation, and on the basis of his former membership on the federal Wage Stabilization Board, urged the industry to cooperate with the Washington authorities in securing only such modifications of the Taft-Hartley Law as will be of mutual benefit to the public, to management and to labor, and not to labor alone.

Mr. Robertson as chief of a delegation to study the future welfare of a revivified Germany, said that Germany through the impetus of American encouragement has gone farther than any other European nation on the road to industrial recovery. Its production today, he said, is far above its pre-war output, despite the loss of millions of men and bomb-torn factories. This was due, he said, to a willingness on the part of the German people to pull themselves back up to prosperity, a trait not shown so sharply in other countries, and only now beginning to be manifest in Britain. European socialistic tendencies, he indicated, are beginning to fade.

Bright future seen by APPA in 77th annual convention

THERE IS NO GLOOM in the paper industry's outlook. The current year will have its problems, but real recession is not one of them. There is currently no recession beyond the normal fluctuations in business. As for the future, the industry's biggest problem seems to be one of defining the limits of its potential market.

Meeting in its 77th annual convention, the American Paper & Pulp Association demonstrated the general optimism that helped in making 1953 the industry's biggest production year in history. At sessions in New York's Waldorf-Astoria Hotel leaders in pulp and paper were told that talk of recession is for the most part politically inspired, with no actual economic basis.

In an APPA-conducted survey the top echelon of the industry revealed cautious satisfaction that this year is to be another important landmark in technical and business progress. Leaders look to 1954 as a year of high output, widespread consumption, greater efficiency in management and operations, and constructive intensification of selling.

At a convention that was busy for four days studying progress and problems—from complicated fiscal matters to growing fish in paper mill effluent, APPA members took time to assure capable leadership for the coming year. Stepping into the presidency is Donald S. Leslie, president of Hammermill Paper Co. He succeeds Sydney Ferguson, chairman of the board of the Mead Corp. New APPA first vice president is Reuben B. Robertson Jr., president of Champion Paper & Fibre Co. E. W. Tinker was reelected executive secretary-treasurer.

APPA LEADERS gather prior to the Open Industry meeting at the Waldorf (l to r seated): Sydney Ferguson, outgoing president; Donald Leslie, 1954-55 president; (standing) Reuben B. Robertson Jr. of Champion Paper & Fibre Co.; James T. Sheehy of Rayonier Inc., and Mortimer E. Graham of Hammermill

Pulp and paper leaders show optimism in New York meeting . . . 1953 production breaks all records . . . Expansion expenditures called "prudent" . . . Cooperation with NPTA and CPPA urged . . . Potential market shows no limits

After 14 good years, readjustment

Attacking the recent division along political lines as to whether we will experience a mild recession or a major depression, APPA staff economist John H. Vogel warned that industry is facing a period of transition. "Although we still stand in the gray light between war and peace," he said, "there is evidence . . . that once again plans can be made for a peace time economy—modified though it may be by high defense expenditures."

As against those who would meet the present situation by increased wages, shorter hours and large-scale deficit spending, Mr. Vogel urged increased efficiency and lower production costs. He warned against "hopping up" the economy by "causing a fresh round of inflation."

Mr. Vogel recognized two major weak points in the present situation: the current figure of unemployed—amounting to some 2,500,000—is likely to rise in the months ahead to 3,000,000 or 4,000,000; and the index of industrial production, now 6 or 7 per cent below the peak of last July, is likely to decline still further until it is perhaps 10 per cent below the average of 134 in 1953.

Against these, Mr. Vogel lined up an impressive list of strong points as a basis for optimism for the year ahead: (1) The country is still enjoying unusual stability in wholesale and consumer prices; (2) surveys have shown that 1954 plant and equipment expenditures will decline only moderately from the level of $28 billion achieved last year; (3) construction expenditures will also continue close to 1953 levels; (4) purchases by all levels of government in 1954 may well exceed those of 1953 as cuts in federal expenditures tend to be counter-balanced by state and local government spending, and (5) personal consumption expenditures have as yet shown no signs of weakening, and tax reductions may be expected to strengthen the nation's purchasing power.

Return of joys and sorrows

Guarded optimism for 1954 was expressed by Mr. Vogel as he discussed the role of the paper and pulp industry in the over-all economic pic-

PRESIDENT'S ANNUAL message is presented by retiring APPA head Sydney Ferguson

R. E. McArdle

D. J. Thomson

ture. "So far as the paper industry is concerned," he said, "1953 has been a record-breaking year as almost 26.6 million tons were produced. This was 9 per cent higher than in 1952 and 2 per cent more than in 1951. However, one should not lose sight of the fact that this was due, primarily, to an upsurge of 1.7 million tons in the output of board. Total output of paper alone, although 4 per cent more than in 1952, was 2 per cent less than in 1951, as such major groups as newsprint, fine and coarse papers failed to equal the levels achieved in 1951.

". . . 1954 may well see a return of competition and the joys and sorrows that accompany it. Those who have prepared for it will gain and those who have not may expect to be penalized."

The industry speaks—hopefully

Each of the many affiliated organizations who claim the APPA as either a parent or God father discussed individual problems at some 93 meetings staged during the mid-February convention. Business sessions were devoted primarily to choosing officers for the coming year and to individual fiscal matters.

All these affiliates, having spent most of the week concerned almost altogether with their own affairs, came together in what has become one of the most popular features of the annual APPA convention—the Open Industry Meeting. Addressing a standing-room-only audience at the Waldorf's Starlight Roof, four leading spokesmen for pulp and paper tackled basic subjects of interest to all producers.

The speakers coupled optimism with an undercurrent warning against over-optimism. Sydney Ferguson, the retiring president, was heard in his annual report. James T. Sheehy, executive vice president of Rayonier Inc., pointed up the all-important role played by management in the organization and operation of an effective safety program. "The Tariff Situation" was the topic of Mortimer E. Graham, secretary of Hammermill Paper Co. and chairman of APPA's task committee that formulated the industry's position in the tariff controversy now being raised in Congress. And concluding the open meeting was Reuben B. Robertson Jr. of Champion Paper & Fibre, who discussed industry's stake in local, state and federal affairs.

Progress and prosperity

Concluding his second term as APPA president, Mr. Ferguson called 1952 and 1953 an "exceptionally active, progressive and prosperous period." Reminding the audience of the record-breaking performance of the industry during 1953, he pointed too to the fact that consumption of paper in the year just past—including substantial imports of newsprint—also set a new record of 31,300,000 tons.

Operations in 1953 averaged about 93 per cent of capacity, proving, according to Mr. Ferguson, "that the huge expenditures made to enlarge our potential capacity since the end of World War II were, generally speaking, prudent."

Swinging into the arena of national and international affairs, Mr. Ferguson declared his support of the Randall Commission (the Commission on Foreign Economic Policy). "From my reading of the section of the Randall report dealing with tariffs," he said, "I would judge that the conclusion of the Commission is at least as conservative as that presented by the Association, and therefore I feel the report is one which we can accept in that its recommendations, if followed, should work out in this regard to the long-run advantage of the industry."

Mr. Ferguson recognized that cooperation between trade organizations is vital to their individual welfare. "It has seemed to me," he said, "that, without in any way infringing upon the fields of operation of either APPA or the National Paperboard Association, we should have at least an informal committee composed of officers of both associations, so that there would be some body to speak authoritatively for the whole paper industry." In support of his plea, Mr. Ferguson pointed out that of the 26.6 million tons of paper and paperboard produced in 1953, 12,703,000 tons were paper and 13,863,000 tons were paperboard.

The speaker then turned his attention to the Canadian industry and the importance of cooperation between APPA and its sister organization to the north, the Canadian Paper and Pulp Association. "Here again," he declared, "without in any way interfering with the sovereignty and scope of the two associations, I believe we should seek a closer rapprochement with the CPPA, whose problems are quite similar to our own in many respects, although of course we are on opposite sides of certain questions."

A pledge of interest in safety

Management's role in a successful safety program is vital and perhaps of even more importance than the work of safety personnel, for without support from the top ranks no program in any field of operations can succeed. This was the view expressed by Mr. Sheehy, one of the safety pioneers in the industry. Addressing the Open Industry meeting, he recommended a pledge be taken by management in the interest of safety:

" . . . Make certain that all levels of management in your companies, including every supervisor, receive a spelled-out clear-cut policy on safety. Make certain that a statement of management's acceptance of the importance of accident prevention is incor-

Dr. J. A. Hall

W. Roy Bell

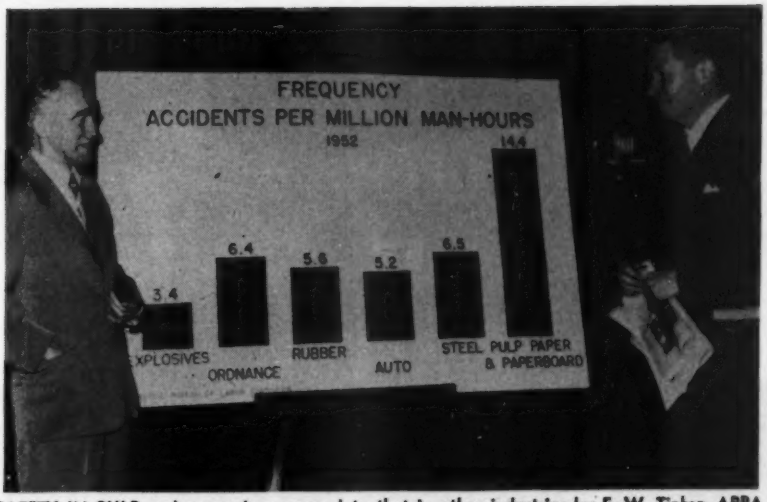
porated in a spelled-out policy that is included in each company's industrial relations handbook. Then your management associates and your employees and your neighbors will know for certain that your attitude on the subject of safety is completely sincere."

For his study of safety practices in the pulp and paper industry Mr. Sheehy chose a half dozen "representative" American manufacturing operations. The comparative frequency rates (numerical value of lost-time accidents per million man-hours worked) were for 1952 as follows: explosives, 3.4; steel, 6.5; automobile, 5.2; rubber, 5.6; ordnance, 6.4, and pulp, paper and paperboard, 14.4.

Mr. Sheehy contended that pulp and paper finds it impossible to build a substantial defense of its poor showing. It cannot rely on the idea that it is a more hazardous industry. It might, however, fall back on an historical defense: the man-power shortage suffered during World War II. ". . . We recognized—with more emphasis than we had ever known before —that a most serious drain on man-hours *is* the industrial accident." The experience of the war years, he continued, brought about a concerted effort on the part of management in the American pulp and paper industry to reduce its accident rate.

The safety picture in the industry is by no means bleak, Mr. Sheehy assured. The average frequency has dropped from 26.9 in 1946 to 14.4 in 1952, a reduction of 47 per cent. For *all* manufacturing, the Bureau of Labor Statistics reports a drop from 19.9 to 13.5 in the same period—a reduction of 32 per cent.

". . . The industry's effort to reduce job hazards has been effective," the speaker declared; "we have made improvements, and these improvements have been substantial. But, in a sense, we will continue to be in a defensive position in the face of any objective analysis until we can make further substantial reductions—at least as great percentage-wise as we have already achieved. Without your sincere and continued interest and your unvarnished support, such an improvement in performance could not have been accomplished—but let's not stop at the half-way mark."



SAFETY IN PULP and paper is compared to that in other industries by E. W. Tinker, APPA secretary-treasurer, and Dwight Stocker, president of Michigan Paper Co.

A strong and expanding economy

That any trade agreement must be based on a strong and expanding American economy was the policy expressed by Mr. Graham speaking as chairman of APPA's task committee on the tariff. Expressing the need for a permanent and stable tariff policy determined by the legislative branch, Mr. Graham listed three specific needs in the field of trade agreements:

(1) True and mandatory reciprocity; (2) protection for the preservation of the United States economy, with rates as low as possible—so long as U. S. industry is protected, and (3) agreements made with the largest foreign producer, with the bargaining undertaken by the legislative.

The pillars of industry

Concluding the Open Industry Meeting, Mr. Robertson, new first vice president of APPA, called for a common sense approach to pending labor legislation. Any changes to the Taft-Hartley Law should not weaken or eliminate provisions forbidding the closed shop, the secondary boycott and the jurisdictional dispute, and should not jeopardize the principle of voluntary union membership.

A former member of the Wage Stabilization Board, Mr. Robertson endorsed a number of labor recommendations in President Eisenhower's recent message to Congress. Any changes in labor relations, he pointed out, should preserve the five "pillars of industry:" (1) profit; (2) competent organization; (3) good internal relations; (4) good external relations, and (5) management support in all phases of manufacture and backing for all company programs.

Mr. Robertson supported the President's view that union and welfare funds be safeguarded to protect the individual worker; that strike votes be taken by secret ballot, and that state labor laws be applied where they are not inconsistent with specific provisions of federal law.

No occasion to fear

Over-all, at the moment at least, the situation is indeed a heartening one, and there is no occasion for fear with respect to the future of the pulp and paper industry. In an address befor the Salesmen's Association of the Paper Industry, E. W. Tinker showed almost an unqualified optimism. The future seems bright.

"As an industry we are highly competitive within ourselves," he declared, "but we are also growing more and more competitive with other industries. Certainly we are a factor to be reckoned with in such industries as textiles, glass, lumber, plastics, steel, and many others. Our invasion of the fields normally occupied by other industries has contributed tremendously to the phenomenal growth of the pulp, paper and paperboard industry.

Era of playgrounds ends

A four-point program whereby the federal government would transform public forest lands from "luxurious playgrounds" into areas contributing to the national economy was urged at an open meeting of the APPA Forest Policy Committee by W. D. Hagenstein, managing director of the Industrial Forestry Association, Portland, Ore.

One of the many sessions dealing with the all-important field of forest management, the committee meeting concerned itself primarily with the

INFORMAL CONFERENCE during the APPA sessions finds (l to r) Sydney Ferguson, R. A. McDonald of East Texas Pulp & Paper Co., and Leo Croy of Marathon Corp.

Douglas fir region of the Pacific Northwest.

The four points suggested by Mr. Hagenstein were: (1) more timber access roads; (2) more adequate forest inventory; (3) less cumbersome sale procedures, and (4) redetermination of allowable cuts of public forests.

"No longer should any one hide behind the 'multiple use' theory as an excuse for not practicing forest management on areas with commercial possibilities," he said. "Where a good job of forest management is accomplished, water supply, wild life and recreational opportunities are assured."

Inadequate protection

Addressing a session of the American Pulpwood Association, Dr. R. E. McArdle, chief of the U. S. Forest Service, warned that much of the responsibility for fire protection is in public hands. There are about 58,000,000 acres of privately owned forest land in this country that have little or no protection against fire, he said, and protection is too thinly spread on millions of additional acres.

"Forest protection programs call for joint and cooperative responsibility between industry and the public," Dr. McArdle continued. "Public responsibilities include providing a minimum level of protection for all forest land regardless of ownership."

Regional task committees

The American paper and pulp industry can claim "the best job of scientific forestry in the world," according to an APPA-conducted survey. Revealed by E. W. Tinker, the study showed that the lands now owned or leased by the industry are regarded by public agencies "as models in the field," and that the industry's program for renewing and activating America's forests is "stupendous and continuously expanding."

The big need currently, Mr. Tinker declared, is aid and advice for the small woodland owners. Industrial foresters, he continued, should establish regional task committees throughout the country for the purpose of cooperating with the government in making scientific forestry available to small woodland owners.

Officers elected to APPA affiliated groups and divisional associations during the New York convention are listed on page 1360 of this issue.

A 15-year record: pollution down 50%

During the annual meeting of the National Council for Stream Improvement Inc. it was announced by George E. Dyke, chairman of the board of governors, that: "Despite the fact that paper industry production has doubled in the past 15 years, the industry's total pollution load has not increased but rather shows a slight decrease. This is merely another way of saying that over the past 15 years paper industry pollution for the average ton of product has shown a 50 per cent reduction."

Of major interest in this year's discussions of the stream improvement group was the problem of water supply. ". . . It is estimated that by 1975 total water requirements for all public and industrial uses will have reached the staggering total of 150,000 billion gallons annually, about twice what it is today," according to Mr. Dyke. "It would seem advisable for individual companies to analyze their particular situations on a long-term basis."

Water and wood of equal importance

In his remarks at the annual session, Mr. Dyke emphasized the growing importance of water supply in the determination of mill location. In some instances, he said, increased amounts of water will be available for dilution. In such situations, stream improvement will result, reducing effluent treatment requirements. In others, the impossibility of increasing available water will make high degrees of effluent mandatory if expansion is to continue.

Materials: key to operation

An annual highlight of the APPA gathering at the Waldorf is the open meeting of the Materials Committee, where are discussed some of the universal problems encountered in the purchase and use of raw materials and machinery.

Leading off the 1954 session was W. R. Beckett, executive vice president of Beckett Paper Co., whose topic was "Management and the Purchasing Department—their Relationship Today."

Prefacing his remarks with a brief description of the manner in which the purchasing department operates at Beckett Paper, the speaker advocated that some items of supply should not be purchased by the head of purchasing alone. "There are," he declared, "certain types of material, equipment and supplies which represent such a large portion of total expense that their selection (should be) undertaken by a principal officer of the company. In the case of a mill depending solely on wood pulp for its fiber supply, wood pulp is such an item. In our company there are two officers between whom all decisions concerning wood pulp are made. They are the executive vice president and the head of manufacturing, also a vice president.

". . . the purchasing of power, coal, size, filler, felts, wires, and color is carried out as directed by higher authority, for whom the purchasing department then performs all necessary services."

Mr. Beckett described the head of purchasing in any company as "a very substantial fellow. . . . His relationship to management is that he is part of it, inseparably and essentially. He should sit, and often does, in the councils where plans are drawn and action directed. His knowledge covers, to some degree, the workings of all departments, and he can generally contribute some sensible and appreciative opinion in situations where the needs and operations of several departments

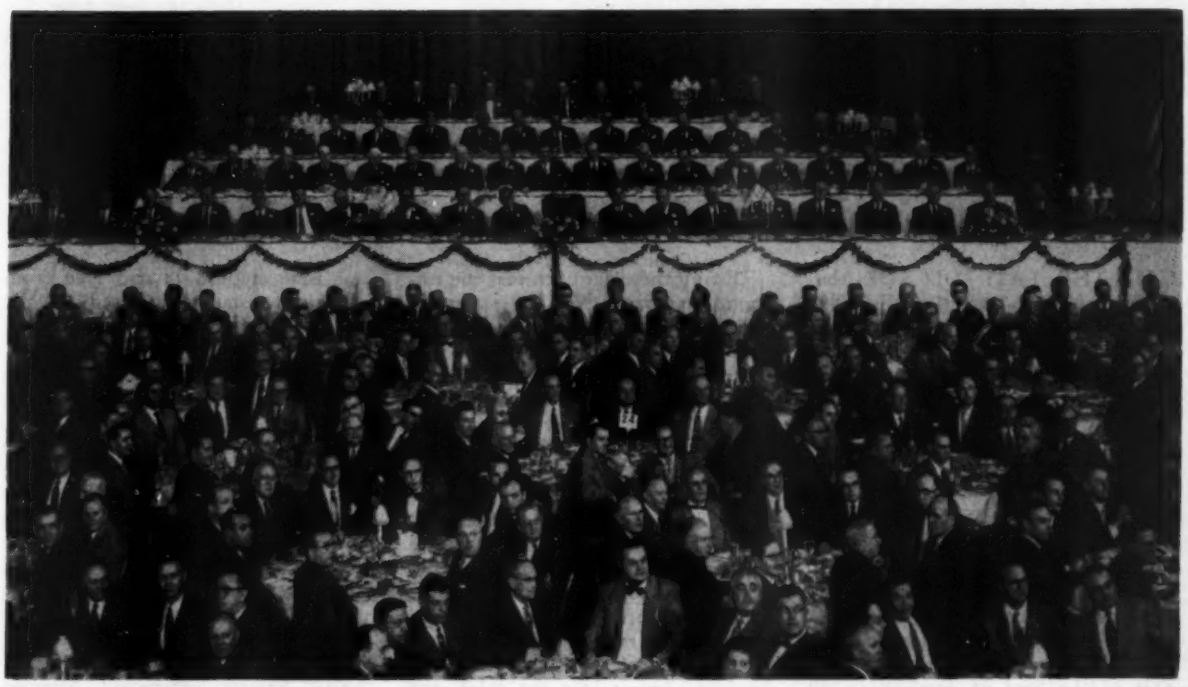
are concerned. In this regard he is more likely to have the broad point of view of higher management than the more restricted view of the individual department head."

The necessity of frequent meetings between supplier and customer was voiced by Harold J. Barrett, field research manager for the Electrochemicals Department of E. I. du Pont de Nemours & Co. Speaking at the Materials Committee meeting, he said that "the only way suppliers can make their products fit the needs of the customers is to get together." Chemicals, he noted, have made possible great strides in the paper industry; and, in turn, that progress has increased the need for chemicals.

Listing the major chemicals in constant use in the industry as alum, clay, lime, sodium silicate, solvents, sulfur and rosin, Mr. Barrett described some of the recent advances made possible through chemicals: upgrading groundwood pulp, superbleaching, improvement in strength, and diverse applications and products.

In a short talk, Philip H. Goldsmith, general sales manager for Pusey & Jones Corp., declared that "every paper machine has to be better than its predecessor." In the paper machinery industry every investment by a customer is so great that it is not economically possible to buy an existing model "as is."

The program concluded with the showing of the award-winning March of Time color film on the nation's coal industry, "Powering America's Progress."



TIERED HEAD TABLES at the yearly luncheon of the Salesmen's Association of the Paper Industry; the affair was staged at the Waldorf-Astoria

Continued Freedom is Answer to Communism, Manion Warns SAPI

THERE CAN BE NO permanent victory for Communism anywhere in the world while a free, strong, solvent and constitutionally governed United States is vigilantly maintained.

This view was expressed by Clarence Manion, former chairman of the Congressional Committee on Intergovernmental Relations, as he addressed the 35th annual luncheon of the Salesmen's Association of the Paper Industry. The meeting was staged in the grand ballroom of the Waldorf-Astoria.

The dynamic national existence of the United States, he declared, proves positively that a condition of human liberty and personal responsibility will and does produce the greatest possible measure of material abundance. "The best service that American business can now render to American freedom is to launch a great advertising campaign designed to sell our people once more on the combined value of the Ten Commandments, the Declaration of Independence, and the Constitution of the United States."

Mr. Manion resigned the chairmanship of the Congressional Committee on Intergovernmental Relations shortly after his appearance at the SAPI luncheon. His resignation was requested, reportedly by Gov. Sherman Adams, presidential assistant, because of his frequent outspoken support of the Bricker Amendment.

Early new SAPI president

At the annual SAPI meeting in the Waldorf, H. M. ("Stub") Early of International Paper Co. was elected president for the 1954-55 year. He succeeds David Cheever of Hollingsworth & Whitney Co. Paul Craig of Champion Paper & Fibre Co. was made vice president of the Western Division to fill the vacancy created by the election of Mr. Early, while William Wagley of Wausau Paper Mills Co. was chosen assistant vice president of the division. All other officers were reelected.

For serving the industry best during the past year, Glenn Spicer was presented the President's Award. He is with Hammermill Paper Co.

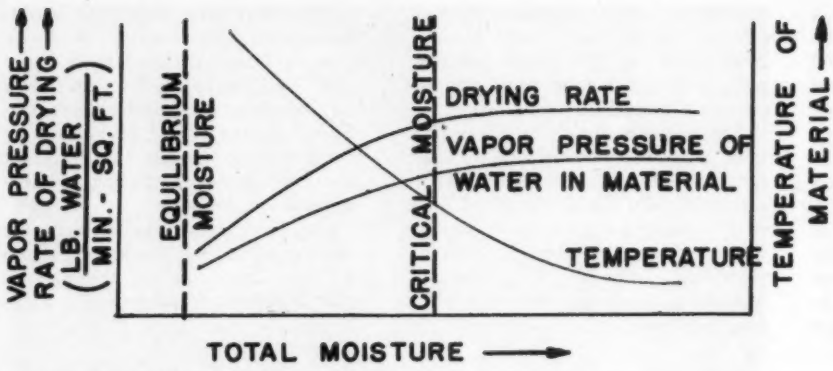


Fig. 1—Characteristic curves for paper drying

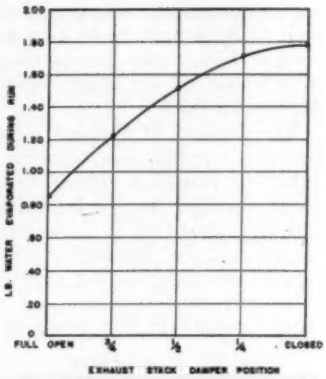


Fig. 2—Damper position vs. water evaporated under constant operating conditions

Drying converted paper products with radiant gas burners*

JAMES L. KUSNERUS and RICHARD E. MOEHLMAN

IN THE LAST DECADE the emergence of new techniques in radiant heat generation by gas burners has opened the possibility of wide use on papermaking and paper converting machines. The method of using gas burning units in drying has several advantages: (1) they occupy less floor space; (2) for equivalent thermal output they cost less, and (3) they provide ease and rapidity of control.

The radiant gas burner directs a gas flame along a ceramic surface, which by virtue of its insulating qualities becomes incandescent and converts into radiant energy a large part of the heat of combustion of the gas. The incandescence is incidental, but practical production of radiant heat in considerable quantities always includes some rays in the visible wave band. These burners are installed in a variety of settings through which the paper is passed and dried by direct exposure to the flame.

Theory of paper drying

Moisture in paper exists in two forms. First, there is unbound moisture which exists in the pores and voids of the material and exerts a vapor pressure equal to that of free moisture at the temperature of the material. Second, there is bound moisture which exists in the fine capillaries and the fiber walls of the paper and, because of its intimate association, exerts a vapor pressure lower than that of free moisture at the temperature of the material.

During the drying process the unbound free water will be evaporated first. For any given conditions of drying the rate of evaporation will be constant as long as the free water in paper can flow by diffusion from the interior to the surface as rapidly as it is removed by evaporation. These two processes, evaporation from the surface and diffusion of water from the interior of the sheet will go on simultaneously until a point is reached where diffusion can no longer keep up with the rate of surface evaporation. At this critical value in the rate of moisture transfer, the surface of vaporization will begin to recede into the solid, and there is a decrease in the drying rate. The temperature of the material rises rapidly, and the exposed surface is not completely wet. Figure 1 shows characteristic curves for drying and other conditions during drying operations.

Drying with radiant gas burners

The mechanism of drying hygroscopic material is basically the same, regardless of the method of supplying the heat. The diffusion of the moisture from the interior of the sheet governs the drying rate in any drying system. However, it does not follow that the entire mechanism of drying is similar in each case. The radiant energy absorbed by the sheet is essentially constant if the burners consume a constant quantity of gas per unit time and, since this constitutes a large portion of the heat involved, radiant heat determines to a major degree the surface temperature of the sheet. The radiant heat method is also free from gas film resistance, since radiant heat penetrates gas films without being absorbed by the film.

If the intensity of radiation is high, the surface becomes heated rapidly in relation to the interior. This is especially so with materials of low thermal conductivity such as paper. It therefore follows that there is a limit in the speed of heating imposed by the ability of the paper to withstand a high surface temperature and a steep temperature gradient throughout its mass without spoiling. There is evidence that with multi-ply paper with a waterproof barrier interposed between plies there would form steam pockets and blisters, between the plies where steam is trapped, and cause delamination and consequent spoiling.

The drying of paper by radiant gas burners depends on two groups of variables:

(1) Drying conditions to which the material is exposed — (a) temperature and humidity of the air and gases with which the paper is in contact; (b) the conditions of its exposure to that air and gases; (c) the velocity and turbulence of the air and gases passing the sheet, and (d) the radiant heat which it may receive.

(2) Character of the product being dried — (a) surface conditions in regard to roughness and porosity; (b) raw material from which the product was manufactured; (c) surface coating; (d) amount of water in the sheet, and (e) maximum energy absorption capacity without spoiling the quality of the product.

*Condensed from a thesis presented to the Faculty of Engineering, University of Cincinnati.

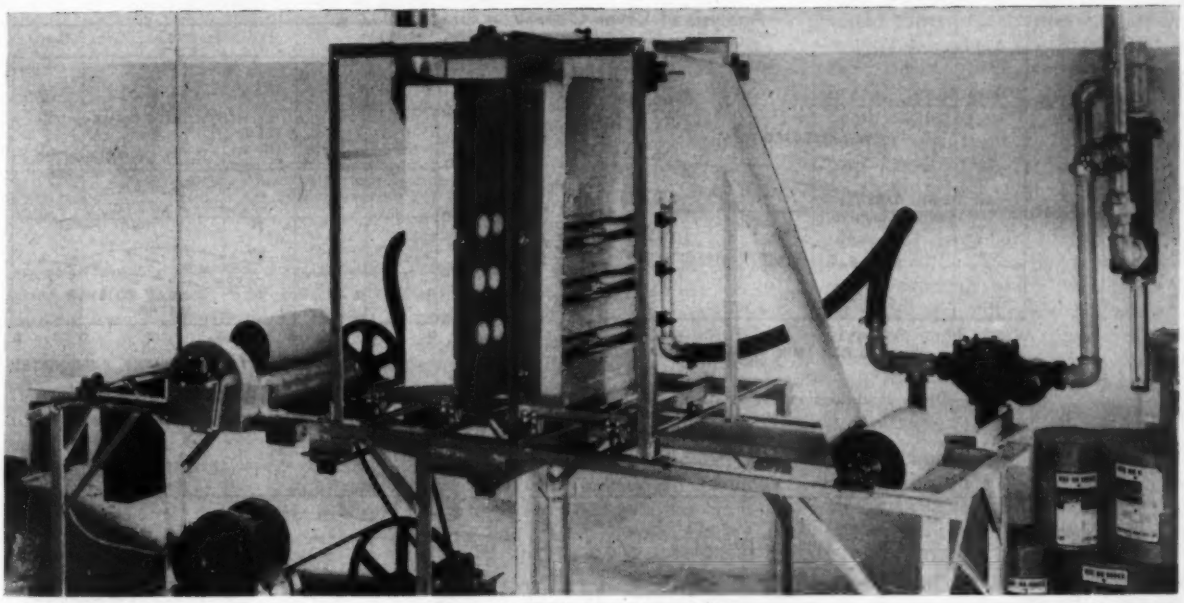


Fig. 3—General view of test machine

The test machine

Figure 3 is a general view of the test machine. The main frame is constructed of angle iron. On either end of the frame are located the unwind shafts, the one on the left being used for conditioning and the one on the right for the drying operations. The ½-in. diameter shafts are each fitted with two taper core plugs which are forced into the core of the simple roll, thereby locking the roll into the shaft. Four ½-in. diameter leaf rolls are used on the machine; two are mounted on the angle iron bridging over the dryer, and two are mounted on the underside of the main frame. The leaf rolls directly above and below the panels are mounted to provide adjustment along the longitudinal axis of the machine to keep the paper web centered between the panels as the distance between the panels is varied. The winder is located on the main frame to the left of the dryer. The surface type winder consisted of two 6-in. diameter rolls both positively driven from a 2-hp 1140-rpm motor. Surface speeds from 48 to 148 fpm are obtained by a Toledo type 2-A variable speed transmission.

The dryer consists of two opposing panels. Each of the panels consists of 12 burners arranged in three horizontal rows. The four burners in each row are directly connected to a 1-in. horizontal manifold, and the three manifolds join to the 1¼-

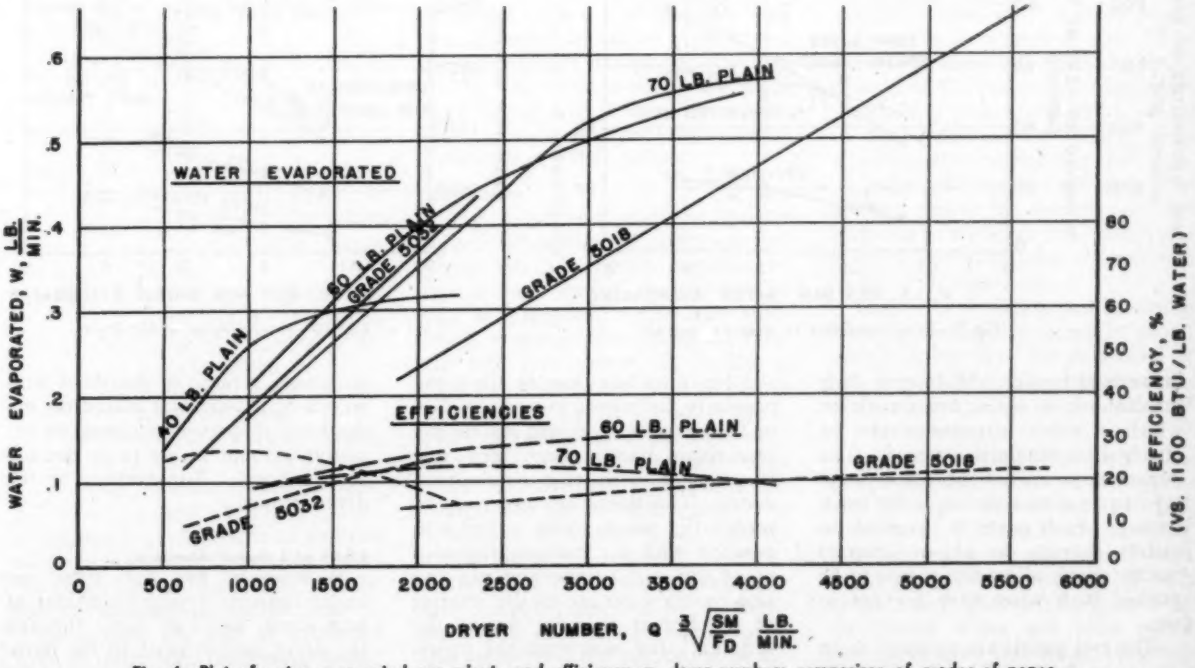


Fig. 4—Plot of water evaporated per minute and efficiency vs. dryer number; comparison of grades of paper

Analysis of Dryer Operation Grade 5032

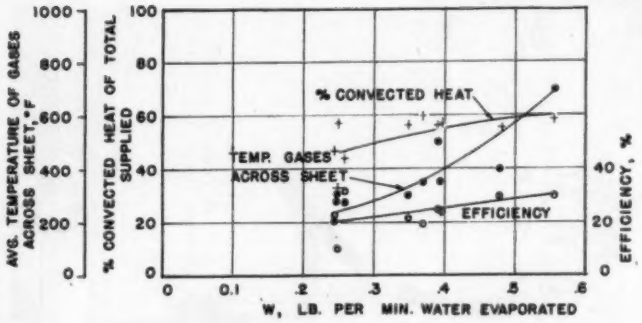

AVG. TEMPERATURE OF GASES ACROSS SHEET, °F
% CONVECTED HEAT OF TOTAL SUPPLIED
EFFICIENCY, %
% CONVECTED HEAT
TEMP. GASES ACROSS SHEET
EFFICIENCY
W, LB. PER MIN. WATER EVAPORATED

Fig. 5—Dryer conditions vs. evaporation rate

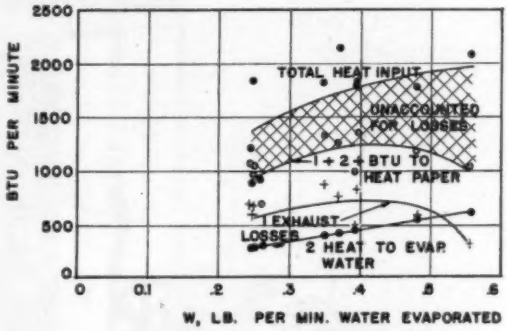

BTU PER MINUTE
TOTAL HEAT INPUT
UNACCOUNTED FOR LOSSES
1 + 2 + BTU TO HEAT PAPER
EXHAUST LOSSES
2 HEAT TO EVAP. WATER
W, LB. PER MIN. WATER EVAPORATED

Fig. 6—Heat division within dryer

Analysis of Dryer Operation Grade 5018

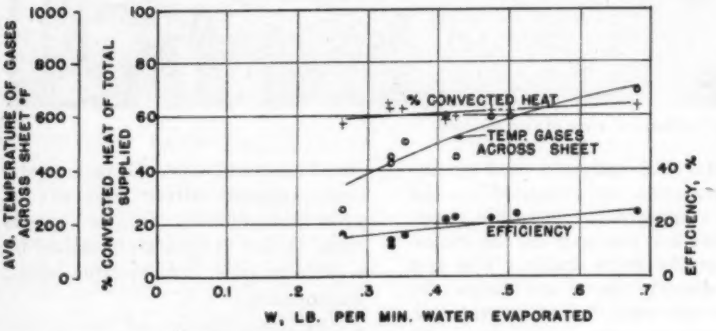

AVG. TEMPERATURE OF GASES ACROSS SHEET, °F
% CONVECTED HEAT OF TOTAL SUPPLIED
EFFICIENCY, %
% CONVECTED HEAT
TEMP. GASES ACROSS SHEET
EFFICIENCY
W, LB. PER MIN. WATER EVAPORATED

Fig. 7—Dryer condition vs. evaporation rate

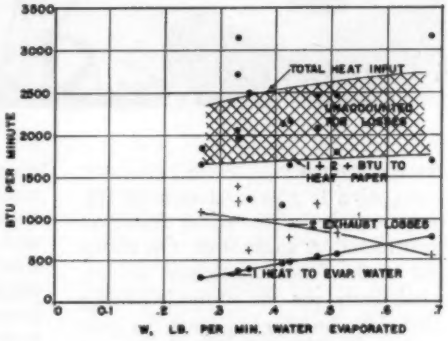

BTU PER MINUTE
TOTAL HEAT INPUT
UNACCOUNTED FOR LOSSES
1 + 2 + BTU TO HEAT PAPER
2 EXHAUST LOSSES
1 HEAT TO EVAP. WATER
W, LB. PER MIN. WATER EVAPORATED

Fig. 8—Heat division within dryer

Analysis of Dryer Operation Plain 60-lb. Kraft

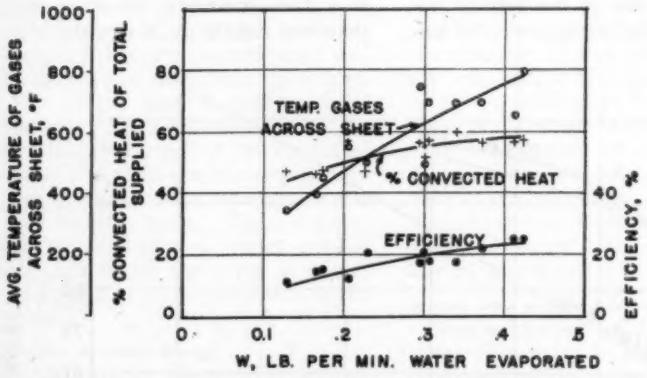

AVG. TEMPERATURE OF GASES ACROSS SHEET, °F
% CONVECTED HEAT OF TOTAL SUPPLIED
EFFICIENCY, %
TEMP. GASES ACROSS SHEET
% CONVECTED HEAT
EFFICIENCY
W, LB. PER MIN. WATER EVAPORATED

Fig. 9—Dryer condition vs. evaporation rate

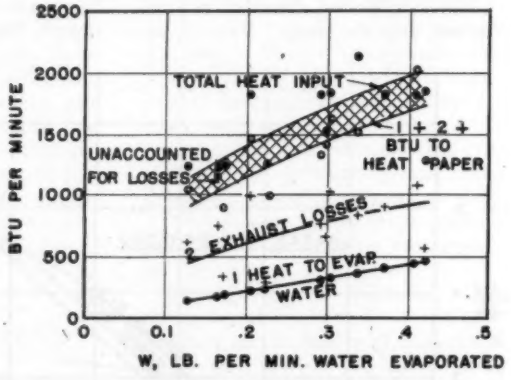

BTU PER MINUTE
TOTAL HEAT INPUT
UNACCOUNTED FOR LOSSES
1 + 2 + BTU TO HEAT PAPER
2 EXHAUST LOSSES
1 HEAT TO EVAP. WATER
W, LB. PER MIN. WATER EVAPORATED

Fig. 10—Heat division within dryer

in. vertical header. Midway in each manifold is a ⅛-in. brass cock to which a water manometer can be attached for obtaining pressure. The burner cups are of the Selas Corp. type and are mounted in a fire brick setting. Each panel is mounted on casters running in 1¼-in. channel tracks, which allow the panels to be pushed back when they are not in use.

The two panels are enclosed in an 18-gauge sheet steel hood. The rear and top sides telescope to allow the panels to be moved closer together or further apart and still maintain a continuous hood. The front side is provided with two overlapping doors. The doors are necessary to permit the panels to be pulled into position with the machine threaded up at the start of the first run and also to allow access to the interior of the burner chamber during the test run. For runs with the panels set at the distance other than the minimum, a piece of flat sheet steel with a ¾-in. slot was placed on top the hood to prevent blowing an excessive amount of air in at the top of the hood. The bottom of the dryer is open.

Effect of exhaust dampers

A series of five tests were run under constant drying conditions of heat input, speed of paper through the dryer, and distance of the burners to the sheet. The position of the

Table I—Data on grades of paper tested

Grade No.	Composition (1) (Kraft Paper)	Coating Kind	Coating Wt. (2)	Stretch, % Long.	Stretch, % Lat.	Caliper, In.
5018	2-40# Natural	Asphalt	100	20	15	.022
5032	2-60# Natural	Asphalt	120	20	15	.032
40	Plain Natural (3)					.004
60	Plain Natural (3)					.006
70	Plain Natural (4)					.0075

(1) Number of plies and paper basis weight of raw material, lb/ream of 3000 sq. ft. (2) LB./ream (3000 sq. ft.) of material. (3) Southern Kraft. (4) Northern Kraft. (5) All grades 12" wide, plus or minus one-sixteenth.

exhaust damper was varied from full open to full closed. The results of these fiveruns are plotted in Figure 2.

Examination of Figure 2 shows that there is a remarkable variation in water evaporation for different damper positions. Changing the damper position from full open to one-half open increases the amount of water evaporated from 0.84 lb. to 1.52 lb. per run. The reduction in amount of exhaust gases leaving the dryer allows the heat generated in the process of combustion to linger in the dryer and perform the useful function of evaporating water by being transmitted to the sheet by convection.

The increase in the rate of drying is significant down to about ¼ closed damper, showing an almost linear relationship. Beyond this damper setting the rate of evaporation drops off and does not materially increase.

Test results

The test results are shown in Figure 4—a combination graph of five figures and showing a comparison in drying rates between the several grades tested. The grades of paper tested are shown in Table I.

The results present proof of the dimensional equation

$$W = CQ\sqrt[3]{SM/Fd}$$

Where W = weight of water evaporated per minute,
C = constant determined for each grade of paper,
Q = heat input into dryer, in BTU's per minute,
S = speed of paper in ft. per minute,
M = lbs. of water per lb. of dry paper,
F = flow of gases from stack in CFM, and
d = distance between burner and sheet.

Figures 5 to 10 present an analysis of the operation of the test dryer from the standpoint of heat balance and the role of convected and radiant heat.

In general, the role of convected heat increases with increasing drying rates. At low drying rates the heat is split approximately in a 50:50 ratio, increasing to about a 60:40 ratio in favor of convected heat and remaining constant at the higher rates. Concurrent with this trend is the sharp increase in the temperature of gases across the sheet. This would be expected with an increase in total heat supplied. The total heat supplied would naturally have to be increased to achieve a high drying rate, but it is noticed that this rises slightly faster than efficiency. The hot gases are the medium of convected heat transfer; and increase in the temperature of these gases would increase convected heat transfer. The temperature of the burners does not rise as fast for an increase in total heat input as does the temperature of gases across the sheet; consequently the role of convected heat increases. Efficiency also rises, but more slowly; the fact that efficiency and per cent convected heat both rise would increase that a dryer of this type should be designed to operate under conditions that allow a high burner temperature for large production of radiant heat but at the same time not overlook the role of convected heat. There should be a minimum of waste of this convected heat as would be caused by too rapid passage through the exhaust stack.

The heat division within the dryer must be taken as a very approximate analysis, and trends only are indicated by the plotted data points.

Conclusions

The dimensional equation appears to be valid within the limitations imposed by the over-all precision of measurement during the tests. The plot of drying rate versus dryer number is a straight line up to a certain rate and then curves off, indicating that the falling rate of the drying curve (Fig. 1) has been reached. From this point upward an equivalent amount of water evaporated takes more time and heat than that in the straight line portion of the curve. The location of the critical point is strictly a function of the material.

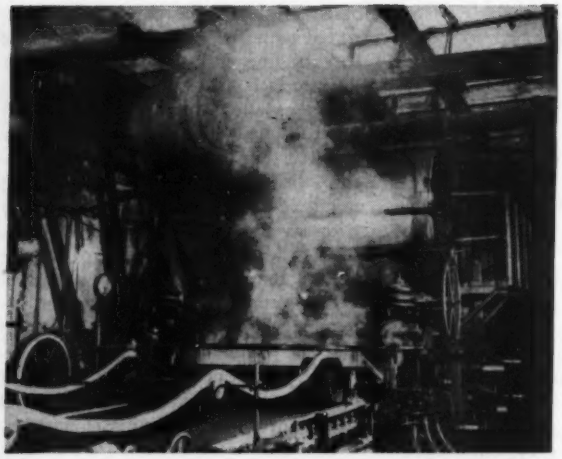
For plain kraft paper drying rates are in rough proportion to the thickness. All other things being equal, this means in direct proportion to the basis weight of the paper. For converted paper products the slope of the straight line curve is characteristic of the product. It is interesting that in neither grade tested was the critical point reached; spoiling occurred before any deviation from the linear relationship was observable. This means that in these grades, which are two-ply with a waterproof barrier between the plies, the maximum drying rate is determined by the spoiling point; that is, the point at which the paper delaminates and will not relaminate and give the same quality product as before. Consequently, each product must be considered as an individual case in determining drying characteristics.

An examination of the dimensional equation shows that heat is the most important factor, since it is in the first power; the effect of other variables is less pronounced, but in order of decreasing importance they appear to be (1) flow from the exhaust stack, (2) distance between the burners to the sheet, (3) speed of paper, and (4) moisture content of the sheet. It is of course assumed that the moisture content of the sheet is of high enough value to be in the straight line portion of the curve when subjected to drying conditions.

Improvements in drying rates were immediately achieved by decreasing the flow of exhaust gases out of the exhaust stack. If throttling of the exhaust stack were considered in a larger, permanent dryer, there should be included safety devices so that in cases of flame failure, the damper or throttle would be open wide and the potentially explosive mixture of gases drawn out of the dryer and exhausted to the outside of the building. Also, when the dryer is shut down for thread-up or other reason, immediately after operation, the residual heat makes undesirable conditions for servicing. The damper should be opened on these occasions to withdraw this excess heat and aid in cooling the adjacent area to tolerable limits.

Radiant heat plays a part in drying with gas burners that cannot be underestimated, but since the production of this heat is limited by many factors, more advantage should be taken of convected heat.

It seems likely that the actual quantitative results of the tests are applicable to larger dryers on a per foot width basis. This conclusion is reached after examining tests performed on a larger dryer. Multiplication of both ordinate and abscissa of Figure 4 by the desired width will yield values reasonably close for design purposes.



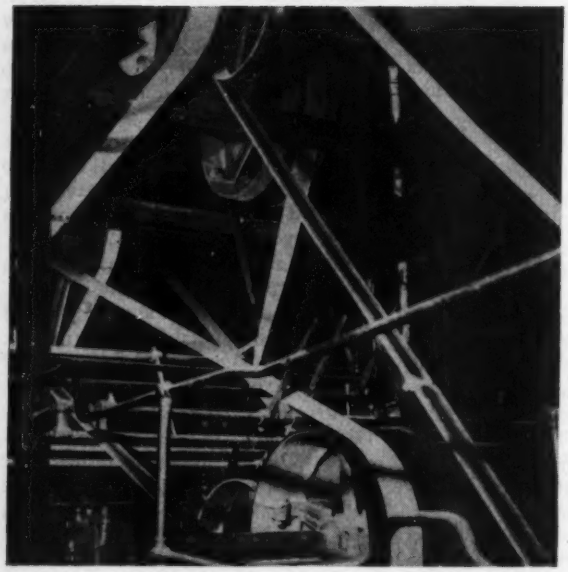
An ERP-reconstructed pulp mill— a cold

The old paper machine was slow, with much loss of heat and power and a complicated and inefficient tranmission system

THE FRANTSCHACH Natronzellstoff-und Papierfabriken was established at Frantschach, Austria, in 1885 by turning a small steel plant into a sulfate pulp mill. Employing 830 workers, the Frantschach mill has been producing annually 18,000 tons sulfate pulp and 12,000 tons kraft paper using old and obsolete production methods.

A change came in April, 1948. A program was drawn up by ERP and the Austrian Association of the Paper Industry which called for the establishment of a new sulfate pulp mill at Nettingsdorf, with an annual capacity of 33,000 tons sulfate pulp and 16,000 tons kraft paper, and a modernization of the Frantschach mill that would raise Austria's total output to 70,000 tons sulfate pulp and 42,000 tons kraft paper.

The old beater room was dark, wet, cold and dirty



The old power transmission system was an inefficient maze of belts and pulleys with a high accident hazard

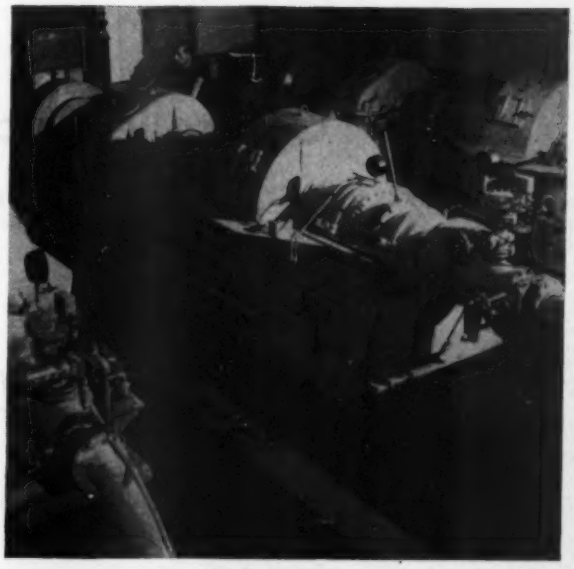
The old rotating digesters were corroded, slow, and difficult to operate

war victory for the U. S. A.

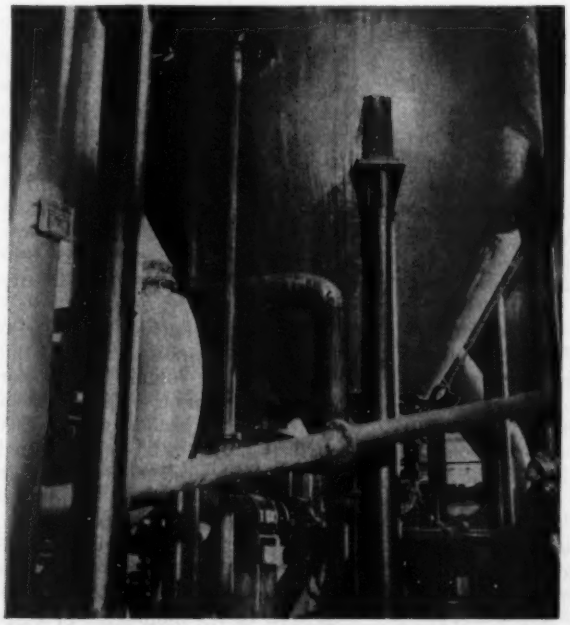
The new paper machine is modern, efficient and has a high output capacity of quality products

By 1953 the Frantschach mill had reached its output objective as laid down under the 1948 program. At the same time, the management — with a strictly private enterprise outlook — constructed a rent-free apartment house for those among its workers who had no suitable living accommodations and a working time of 25 years or more in the mill. For the first time, many inhabitants of this Alpine valley had their own bathrooms, tiles in the kitchen, and electric light in all rooms.

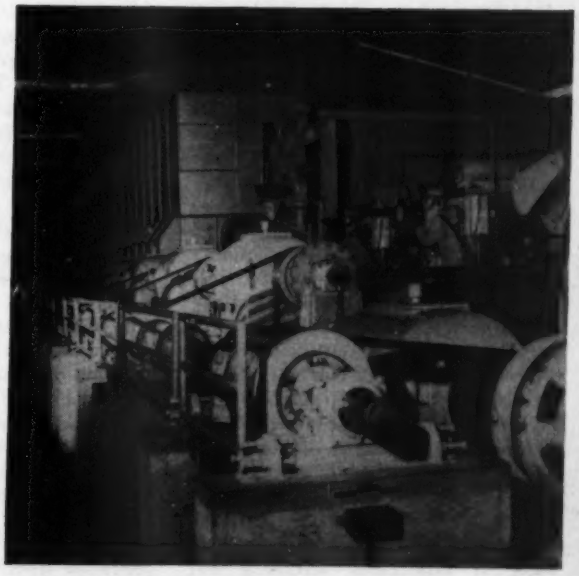
All this had a far-reaching effect on the political thinking of southern Austria, which borders on two Communist-dominated countries. An investment of $3,500-000 under a free enterprise system has raised the population's morale, brought a higher standard of living, and proved to the population that a free enterprise also entitles men to a free choice of work and a free expression of thought.



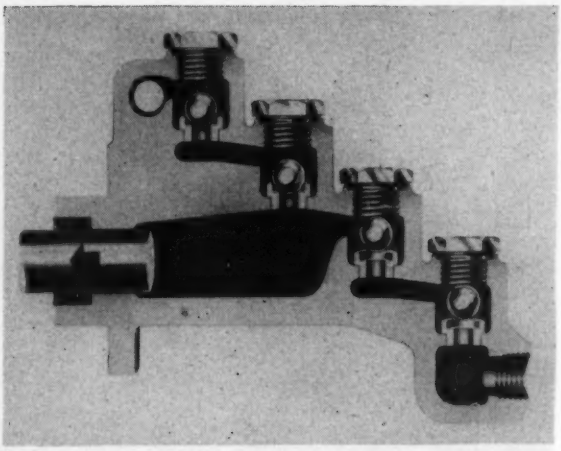
In incredible contrast, the new stock refining room is air-conditioned and clean



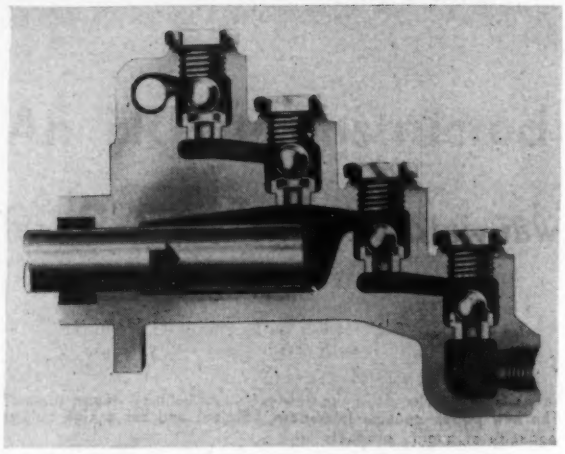
The new stationary digesters are of the latest design with mechanical agitating equipment



In contrast, the new power transmission system is streamlined, reducing accident hazard to a minimum



On suction stroke the outlet ball-checks are seated



On discharge stroke the inlet ball-checks are seated

Controlled volume metering

J. PROCOPI
Milton Roy Co.

▶ Controlled volume pumps are among the indispensable equipment of the modern pulp and paper industry.

▶ Familiarity with their operation and application can eliminate bottlenecks and lead to improved products and increased productivity.

CONTROLLED VOLUME PUMPS are widely applied throughout the paper industry. The extreme flexibility of these metering units provides the one simple solution to many flow problems, including (1) metering and pumping of predetermined small quantities of chemicals and slurries, (2) accurate rationing of a number of chemical streams, and (3) precise automatic control of a process variable such as pH, where controlled volume pumps are used as final control elements.

In pulp digestion, for example, large caustic soda pumps are used to meter caustic in required volume to continuous digesters. Wood chips are fed through a screw conveyor to a continuous digester, and the controlled volume pump adds the caustic continuously to the digester to give the required concentration of this material.

A large West Coast paper plant uses a triplex pump in an automatic rosin emulsifying process. Hot rosin (80 per cent at 170° F.) is pumped and metered to an eductor-mixer along with a metered quantity of hot water (170° F.). The resulting emulsion flows to a mixing tank where a metered quantity of cold water is added. The ratio of rosin to hot water to cold water is maintained accurately by means of this three-cylinder controlled volume pump.

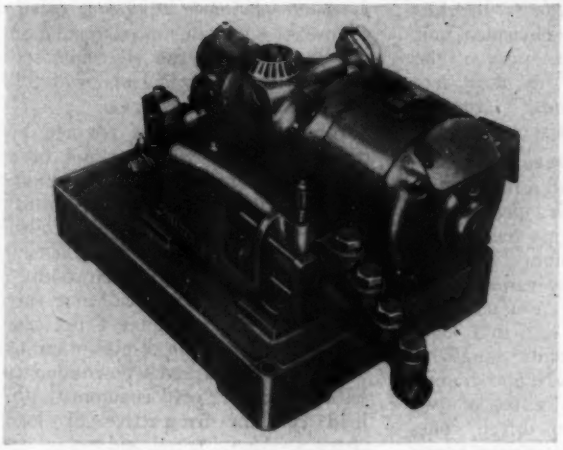
A flushing connection to the packing gland lantern ring is provided to keep the rosin from settling in the packing. Another interesting feature of this pump is the use of a coupling on the speed reducers. This coupling opens on a pre-set torque to prevent damage to the pump and motor if the rosin should freeze in the liquid end of the pump.

In a southern kraft mill, a controlled volume pump is used in an automatic alum dilution system to provide an economical, yet effective, technique for handling the problem. A positive displacement meter is mounted on the water line to the alum dilution tank. An electric contact, mounted on the water meter, places the pump (handling concentrated alum) to proportion the flow of concentrated alum to the water flow. A mixing tank completes the system.

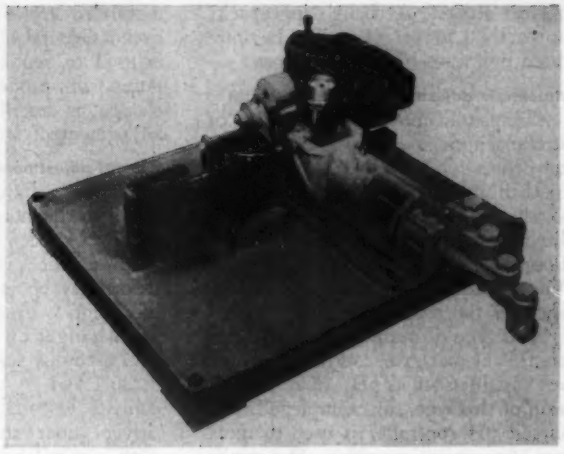
Another proportioning problem in paper mills involves the accurate and continuous metering of resins to pulp to improve the wet strength of paper. A controlled volume pump, with variable speed drive, is used in an eastern paper mill to meter a 6 per cent melamine resin solution in proportion to pulp flow to a head box. The low cost of a system of this type was quickly amortized by the resulting savings in resin.

These are only a few typical pulp and paper mill processes that depend upon controlled volume pumps for economical operation. This list can be extended to include many other uses, such as the metering of filtered lime slurry to absorption towers in acid plants, the addition of dye to pulp, the controlled volume pumping of lime to an ejector mixer in a bleach liquor process, and the treatment of both process and boiler feed water.

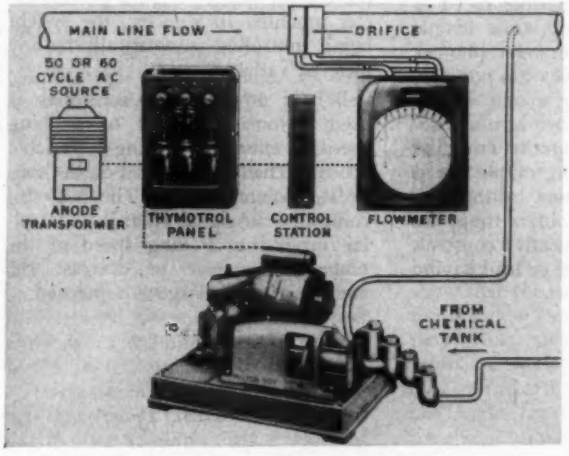
Because of the high grade of pulps manufactured, control and treatment of water must be carefully handled.



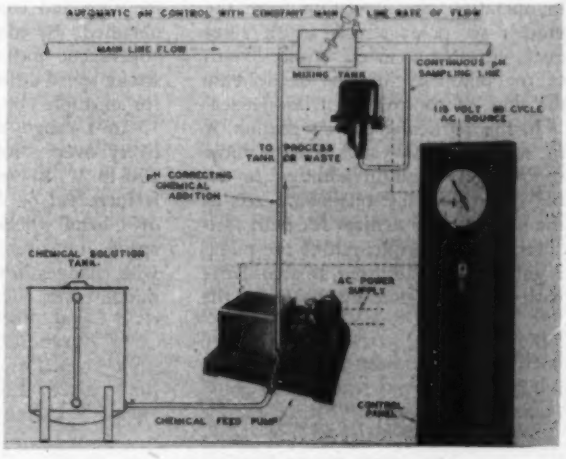
Manual adjustment of stroke speed



Automatic adjustment of stroke length



Automatic adjustment of stroke speed



Automatic pH control

Here, too, controlled volume pumps are widely used throughout the paper industry to meter the chemicals required to remove turbidity and sediment, to remove color and to maintain pH, thereby assuring complete treatment with minimum use of chemicals.

What they are

Controlled volume pumps are reciprocating plunger, positive displacement type pumps designed to accurately deliver a metered quantity of liquid, or slurry, at some point of the process. Basically, these pumps consist of a drive unit, a plunger, and a specifically-designed displacement chamber or liquid end, in which the plunger reciprocates.

Properly designed, the displacement chamber delivers a controlled volume of liquid with each plunger stroke. On suction stroke the outlet ball-checks are seated, preventing back-flow. The partial vacuum created by the suction stroke permits the inlet ball-checks to rise, liquid flows into, and fills, the displacement chamber.

On discharge as the plunger moves forward it exerts pressure on the liquid, seating the inlet ball-checks. The outlet checks are pushed off their seats by the displaced liquid as the plunger moves to the extreme front of the liquid end.

The dimensions of the displaced volume of liquid are determined by the diameter of the plunger and the length of the stroke. Obviously, a larger diameter plunger delivers a larger volume of liquid for the same stroke length. Similarly, a long stroke length delivers a larger quantity of liquid than a short stroke length. This relation between capacity and stroke length is linear. Finally, for any prescribed plunger diameter and stroke length, the volume of fluid delivered over any given period of time is in direct proportion to the stroking speed of the pump. Accuracy of metering is within 1 per cent.

Manual adjustment of stroke length

In the constant-speed motor-driven pump, stroke length can be adjusted by a screw to give variations in capacity of the pump. This adjustment, made while the pump is not operating, alters the position of the trunnion in the slot of the drive wheel, thereby increasing or decreasing the length of the stroke.

If the nature of the installation is such that any adjustment must be made while the pump is operating, a manual dial adjustment of stroke length is provided. This adjustment is made by a hand wheel operating over a chain through a gear train in the rocker box, effecting proper control of stroke length.

There is a fixed throw from the low-speed shaft of the motor gear drive to the rocked box and a variable throw to the cross-head by means of the positioning of the connecting rod adjusted by the lead screw. A vernier dial indicates stroke length to within 1/200th

of full stroke. A change in capacity down to 0.50 per cent may be indicated by means of this adjustment.

Automatic adjustment of stroke length

Completely automatic adjustment of stroke length is also available in motor-driven pumps. The adjusting mechanism is activated by a small reversing motor (for driving the chain), limit switches, and a control potentiometer mounted in the pump base. The potentiometer is geared to the shaft of the reversing motor.

This type of pump is used as a final control element for control of a process variable such as pH. In an installation of this type, for example, a bridge circuit pH controller is used to measure the process variable. The motorized-stroke-adjustment pump regulates the flow of control agent to the process. In operation, any deviation from the process set point results in an automatic adjustment in the stroke length of the pump to increase or decrease the flow of control agent, as needed.

In this particular pH installation, if the main line flow varies widely, a flow controller is used in addition to the pH controller, and one pump acts as the final control element for both variables. The stroke length of the pump is automatically adjusted, in accordance with pH variations, by means of the motorized stroke adjustment. In addition, a General Electric Thymotrol unit is used to regulate the speed of the pump in proportion to flow rate change, as described under "automatic adjustment of stroking speed."

Manual adjustment of stroke speed

The Speedranger adjustment unit combines the motor with a mechanically adjustable speed-changing mechanism. With it, the pump plunger stroking speed may be infinitely varied, while the pump is operating or at rest, over speed ranges of 3 to 1, 6 to 1, or 8 to 1 and, in some frames, ranges of 12 to 1 and 15 to 1. The Speedranger consists essentially of a set of two driver cones and two driven cones with a metal ring transmitting power from the driver to the driven cones. By changing the relative position of the ring and cones, variable speed is obtained. By combining stroke length adjustment with Speedranger plunger stroke speed adjustment, it is possible, for example, by using a unit with a 15 to 1 range, to secure accurate delivery over a total capacity range of 150 to 1. In operation, output speed is increased or decreased by the turn of a hand wheel. At any setting, the speed remains practically constant, with changes in voltage or load having minor effect.

Automatic adjustment of stroking speed

Positive automatic speed regulation can be effected by an electronic system employing Thymotrol, as developed by General Electric Co.

Alternating current is rectified by the "Thymotrol" for operation of a compound-wound direct-current motor. The speed is regulated with a normal range of 20 to 1, accurately controlled and directly proportional to the setting of a potentiometer in the "Thymotrol" circuit. Plunger speed will not vary more than plus or minus 1 per cent with voltage variation of plus or minus 5 per cent. At a given potentiometer setting, plunger speed is automaticallp held constant irrespective of load changes. Motor speed and pump delivery may be regulated either manually by a 10,000 ohm potentiometer at the control station, or by a potentiometer mounted in a meter, the system being controlled automatically by any metered variable.

Where a pneumatic controller is used, automatic control of stroking speed is effected by using a variable speed mechanism mounted on the controlled volume pump. The 3-15 psi controlled air signal from the controller varies the stroking speed of the pump to increase or decrease the amount of control agent, as needed.

Standard freeness and drainage time tests*

—a comparison between the Canadian Standard freeness test and the drainage time test for highly refined stocks.

R. J. BECKER
Riegel Paper Corp.
Milford, N. J.

Condensed by D. S. Davis
Department of Chemical Engineering
Virginia Polytechnic Institute

▶ **For continuous refining to a terminal low, one can conceivably over-refine stock when freeness is used as a control test.**

▶ **No such over-refining can result from the use of drainage time as a criterion. For highly refined stocks the drainage test may be more satisfactory and more significant.**

FOR NEWSPRINT STOCKS Campbell and Lodge (1) mention that the Canadian Standard freeness test is a reliable indication of the manner in which water drains from the fibers on the table roll part of the fourdrinier. Since the British sheet mold requires a greater head of stock than does this freeness tester, and thus compacts the fibers to a greater degree, Casey (2) claims that the sheet mold provides a closer approach to conditions on the fourdrinier. While neither test can simulate operation on the wire, the drainage time as determined with the

*Original E. J. Albert Award paper published in TAPPI, 36 (12) 158A, 1953.

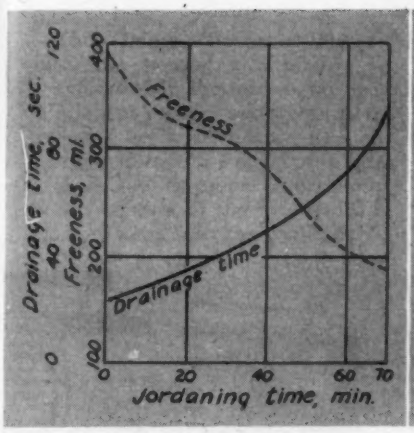


Fig. 1—Drainage time and Canadian Standard freeness versus jordaning time

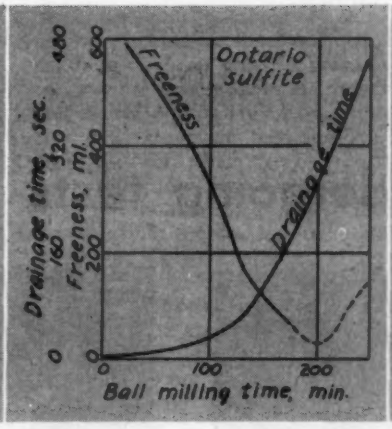


Fig. 2—Drainage time and Canadian Standard freeness versus ball milling time

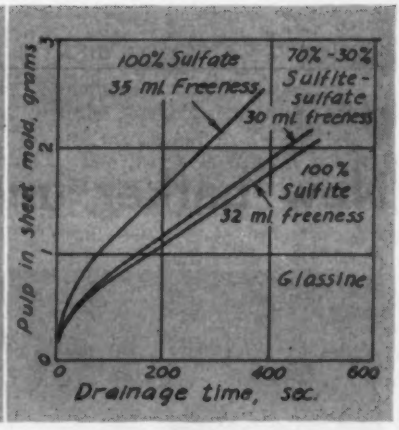


Fig. 3—Sheet weight versus drainage time

sheet mold is probably a better measure of rate of drainage on the paper machine than is the volume of side discharge as obtained with the freeness tester.

In considering these two devices one must remember that high values of side discharge, in milliliters of water, encountered with the Canadian Standard freeness tester, are intended to indicate free stocks, whereas high values of drainage time, in seconds, indicate slow stocks when the British sheet mold is used. The purpose of this paper is to compare the Canadian Standard freeness test with the drainage time test as measures of the high degree of refining characteristic of stocks for the manufacture of greaseproof glassine, and condenser papers.

Procedure and results

To gain information on this subject, sulfite pulp was jordaned in a batchwise manner for periods up to 70 minutes while the degree of refining was followed with a Canadian Standard freeness tester and with a sheet mold. Figure 1, which includes curves of freeness and drainage time plotted against refining time, shows that as jordaning progresses, the rate of change of freeness with refining time decreases while the rate of change of drainage time with time of refining increases, when one disregards the mathematical sign. For some grades of stock zero freeness has been recorded in the mill — a situation that demonstrated the unsuitability of freeness as a control test for highly refined stocks.

For such stocks so much of the fines pass through the perforated plate of the freeness tester that high initial flow rates lead to false or reverse freeness values. Such a condition was encountered when Ontario regular sulfite was refined in a ball mill for periods up to 250 minutes. As shown in Figure 2, freeness values decreased in a normal manner until, after milling for 180 minutes, a freeness of 55 ml. was attained. After 225 minutes in the ball mill the freeness value actually increased to 86 ml., constituting a failure of the freeness test, while the drainage time continued to increase and to reflect faithfully the additional refining given the stock. These data show that for continuous refining to a terminal low (and possibly false) freeness value, one can conceivably over-refine the stock when freeness is used as a control test. No such over-refining can result from the use of drainage time as a criterion.

Since the manufacture of glassine entails various pulp furnishes, the following question arises: If freeness is kept substantially constant, will drainage time vary from furnish to furnish? Campbell (1) noted a contradiction between the drainage and freeness tests when he compared groundwood, with a drainage factor of 36 seconds per gram and a freeness of 82 ml., with beaten sulfite that had a drainage factor of 63 seconds per gram and a freeness of 315 ml. By the freeness test the groundwood was apparently slower than the beaten sulfite; actually, the beaten sulfite was slower than the groundwood, as shown properly by the drainage test.

Tests on furnishes for glassine provide corroboratory data. Three furnishes that exhibited approximately the same freeness values were studied: 100-per-cent sulfate with a freeness of 35 ml., 100-per-cent sulfite with a freeness of 32 ml., and a 70-sulfite-30-sulfite blend with a freeness of 30 ml. During production runs samples of these furnishes were taken at the stuffbox for freeness and drainage tests. The weights of pulp in the sheet mold, as determined from handsheets, were plotted against drainage time at 20° C, as in Figure 3. For one-gram sheets, sulfate (upper curve) showed a drainage time that was about 100 seconds lower than that for sulfite (lower curve). For two-gram sheets, the sulfate pulp exhibited a drainage time that was approximately 180 seconds less than that for sulfite of almost the same freeness. The third curve, for the blend of 70 per cent sulfite and 30 per cent sulfate, fell between the others and thus substantiated the data. Since, at the same freeness, sulfite and sulfate pulps differ in drainage times, these pulps may also show smaller differences among themselves.

Use of drainage time as a control test would require (A) checking of consistency and accurate dilution so that the test could be carried out at constant weight of pulp in the sheet mold, and (B) the application of temperature corrections that should be constant at similar drainage times for different furnishes. For control work in the mill, relatively unskilled personnel can handle both drainage and freeness tests. The former require a little more time than do the latter as well as the full attention of the technician in determining the end point, in contrast to the automatic end point that characterizes the freeness test.

Though the Canadian Standard freeness test is of value, limited data, new and old, show that for highly refined stocks the drainage test may be more satisfactory and significant.

References

1. Campbell, W. B. and Lodge, W. C., Pulp Paper Mag. Canada, pages 189-200, Convention Issue, 1937.

2. Casey, J. P., "Pulp and Paper," page 434, Interscience Publishers, 1952.

New barker undergoing tests

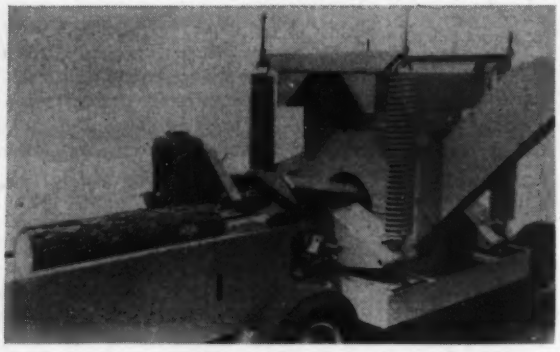


Fig. 1—Side view of "Impco" barker

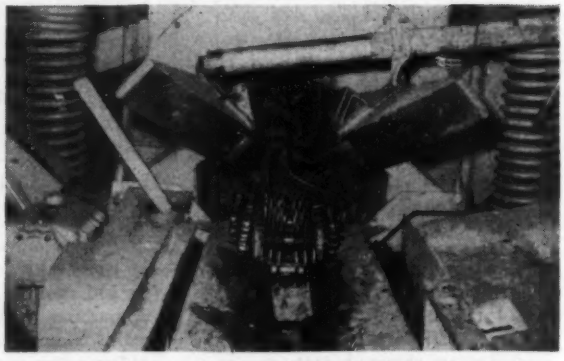


Fig. 2—Infeed mechanism and spring-loaded barking tools

Fig. 3—Forked, knotty and irregular shaped sticks successfully run through the "Impco"

Fig. 4—Fresh cut barked spruce. Darker bolts at extreme left are samples of barked seasoned hardwoods.

Improved Machinery Inc. of Nashua, N. H., has developed a new debarker which has recently undergone trials in the millyard of Eastern Corp. at Lincoln, Maine.

The basis of the "Impco" barker is the Sund machine developed in Sweden. Improved Machinery (Sherbrooke Machineries, Ltd. in Canada) obtained all rights to the Sund on this continent, but found it desirable to redesign it to suit requirements here.

The "Impco" barker is designed for 4-ft. and 5-ft. pulpwood bolts of 4-in. minimum and 16-in. maximum diameter.

Bark removal is accomplished by axially feeding a bolt through the center of a rotating ring on which are mounted six spring-loaded tools.

This basic principle is similar to that used in other machines such as the Andersson, Nicholson, Mira and Skoglund, the chief difference being that, with the "Impco," tool pressure is maintained by powerful springs, whereas with the other units, air pressure or centrifugal counterweights are employed.

The tool arms also are unique in that their particular design causes them to open automatically as each bolt comes in contact with them.

Clamping force is obtained by the four large vertical coil springs shown in Figures 1 and 2. The lower member is a bed of small powered spur rolls and the two upper members each consist of a bank of three idling rolls. A simple linkage arrangement causes the three members to move towards or away from each other simultaneously, giving a self-centering action which holds bolts concentric with the ring of barking tools regardless of the diameter of the wood.

A short infeed conveyor is an integral part of the machine. Chains in this conveyor carry large chairs or dogs, which give a positive drive to each bolt that in turn causes the infeed mechanism to open. Spacing of the conveyor dogs is 2½ ft. greater than the length of bolt being handled.

Bark discharge is at the side of the machine, but a bottom discharge will be available for stationary installations. There are impeller blades on the tool arms for throwing the bark clear of the machine.

The "Impco" barker is to be made available as a basic unit for stationary installation, as a portable unit mounted on rubber tires and equipped for towing, or as a mobile machine which is self-propelling.

Operation

The "Impco" barker is entirely automatic beyond the placing of rough wood in the infeed conveyor. While it is perhaps necessary that an operator be in attendance near the machine in case of a jam and to keep a check on its proper functioning, he is free most of the time to aid in feeding wood into the conveyor.

Degree of bark removal obtained with various species and under different conditions is controlled principally by varying the feed rate. However, this is not a critical adjustment requiring constant attention. Pressure on the tools may also be adjusted, but this seems necessary only in extreme conditions or possibly when shifting between the hardwood and softwood species.

There are only two control levers normally used. One is for the tool ring clutch and the other for the forward-reverse clutch driving the feed works. Control levers and the variable speed adjustment are conveniently located for an operator positioned beside the infeed conveyor.

Production capacity is dependent upon feed rate and average diameter and can vary from as low as three cords per hour to about 20 cords per hour. Most of the wood so far handled has been year-old seasoned hardwood running about 60 four-ft. bolts to the cord. This material has been run through at feed speeds of about 80 fpm, which gives a resulting production rate of about 12 cords per hour. At a similar feed speed, wood running 75 bolts per cord would give a production rate of about 10 cords per hour.

Under sap peeling or water soaked conditions the maximum feed speed of 120 fpm might be used. In this case 75 bolts per cord would give a production rate of about 15 cords per hour, and 60 bolts per cord, 18 cords per hour.

Degree of bark removal is not only dependent on species, season, wood condition and the feed speed selected, but also on diameter and irregularity of the bolt. The majority of knots and growth irregularities can be cleaned very well as illustrated in Figure 3; however, severely crooked and knotty sticks do not feed as well and are not so cleanly debarked as straight smooth ones.

The observations and figures compiled at Eastern Corp. indicate that at least 97 per cent average bark removal is being achieved on mixed seasoned hardwoods being fed at 80 fpm. Species include about equal amounts of beech, maple, and birch, with smaller quantities of white and brown ash.

The maple is cleaned nearly 100 per cent, and the beech does almost as well except where there are scars from beech scale present. A majority of birch bolts are cleaned of all outer bark, but the average is probably no better than 95 per cent. Brown ash is relatively poor, many bolts having 30-50 per cent of the bark remaining. Even this ash could probably be cleaned thoroughly if fed at a slower speed or run through a second time.

Small sample lots of spruce and hemlock have been tested with results generally comparable to the hardwoods. Fresh cut spruce (October) was practically cleaned of all outer bark, but about 30-40 per cent of the inner cambium skin remained. This sample, however, did not contain any bolts under 6 in. in diameter (Fig. 4). Seasoned spruce did not respond as well, leaving an estimated 5 per cent of the original bark at an 80 fpm feed speed, but this lot contained some 4-in. and 5-in. pieces which adversely affected the average.

Adams Tells Goals of Eisenhower Administration at APPA Dinner

Clarence Manion

Sherman Adams

THE ADMINISTRATIONS of Roosevelt and Truman were "two abnormal decades," during which the individual surrendered his responsibility to the government.

Addressing the annual dinner of the APPA in the grand ballroom of the Waldorf-Astoria, Gov. Sherman Adams, assistant to the President, lashed out at the record of the Democrats both in and out of office. However, he said, it will cost the taxpayers "hundreds of millions of dollars" to right the wrongs of the past.

Governor Adams outlined some of the goals of the Eisenhower administration and outlined the major accomplishments realized thus far. He declared that unless a Republican Congress is elected this fall the nation "could be turned back once more to the spending sprees and political orgies to which the American people called a halt in 1952."

The speaker told his audience that a "frustrating situation" will face the country if the Democrats find themselves in power in 1955. He based his plea for a continuance of the Republican administration on the accomplishments attained since the November 1952 elections. Governor Adams credited Eisenhower with having stopped the fighting in Korea; with having reduced government expenses; with working out "honest and conservative" tax reductions, and with having "begun to work out a plan of national defense in keeping with the realities we encounter in this, the second half of the 20th century."

Holding out the prospect of further tax cuts, Governor Adams declared, "Savings in government expenditures will continue to be shared with the taxpayer as fast as we believe it prudent to do so."

Maine, Syracuse Alumni Meet During Paper Week

Alumni groups from both the University of Maine and the State University of New York College of Forestry gathered for their annual reunions during the APPA and TAPPI conventions in New York.

More than 150 Maine graduates met in the Bowman Room of the Biltmore Hotel to pay tribute to Prof. Lyle C. Jenness, head of the school's department of chemical engineering. He received the 1954 Honor Award of the U. of M. Pulp and Paper Foundation for his "more than 30 years devoted to the teaching of the techniques and principles involved in the production of pulp and paper."

Alumni were welcomed to the luncheon by Fred Herbolzheimer Jr., technical director of Marinette Paper Co. in Marinette, Wis.

Honoring the 25th anniversary of the Class of 1929, alumni of the New York College of Forestry met at the Roosevelt Hotel. Guest speaker was Howard E. Whitaker, president of the Mead Corp. Chairman of the program was Clark E. Snooke of Nopco Chemical Co.

Stability and progress reflected by the Canadian pulp and paper industry

The year 1953, as disclosed at the annual meeting of the Canadian Pulp and Paper Association in Montreal, January 27-29, was a year of stability and of notable technological advancement for the Canadian pulp and paper industry. As reported by R. M. Fowler, president of the Canadian Pulp and Paper Association, over-all production of the mills amounted to some 9,300,000 tons. Of the $180,000,000 spent on plants, $110,000,000 went into new construction, machinery, and equipment and $70,000,000 was spent on maintenance and repairs.

Pulp exports, representing 22 per cent of the total output, increased by about 3 per cent over the 1952 exports.

For the 10th consecutive year, Canadian newspring production in 1953 reached an all-time record high. Output amounted to 5,700,000 tons — an increase of about ½ per cent over the 1952 output. Canadian shipments of newsprint to the United States in 1953 were about 26,000 tons higher than in 1952.

The 13 mills operating in British Columbia, according to J. A. Craig, chairman, Western Division, produced over 1,000,000 tons of pulp and paper products in 1953. Newsprint production on the West Coast reached an all-time high of more than 525,000 tons. All primary mills are now fully integrated. Mills which formerly produced pulp or newsprint have now purchased or merged with other units producing lumber, plywood, and various types of pulp and paper to attain balanced production. There are 16 log and wood chipping units operating on the British Columbia coast, converting log culls and residue mill wood or so-called waste into chips for the pulp mills. It is estimated that 85 per cent of the province's sulfate pulp production is derived entirely from what was formerly waste wood.

A new high in the output of specialty papers was reached, exceeding last year's output by about 13 per cent, said E. Norval Hunter, chairman of the Specialty Paper Section. Tremendous development in the packaging field was one of the chief contributing factors stimulating the growth of specialty paper usage.

Douglas Jones
Exec. Sec., Tech. Sec.

Paul E. Cooper
Exec. Bd. Chairman

J. B. Jones
Technical Sec. Chrm.

Dr. John S. Bates
Consulting Engineer

The estimated output of 3,700,000 tons of chemical pulp was approximately 5 per cent higher than the 1952 output, according to C. M. Matheson, chairman of the chemical pulp section.

The production of groundwood, or mechanical pulp, showed a slight drop of less than 1 per cent, said J. Thom, chairman of the Mechanical Pulp Section. The irregular demand both in the United States and overseas markets, and increased American imports from countries other than Canada, were partly responsible for declining Canadian shipments. Over 70 per cent of the groundwood pulp sold in 1952-53 was shipped to the United States, more than 13 per cent moved overseas, and some 16 per cent was sold in Canada.

Paperboard production was approximately 8 per cent greater than in 1952, reported H. Powell, chairman of the Board Section. Shipments of paperboard to domestic markets amounted to 689,000 tons, thus establishing a new high for any single year. There was, however, practically no demand for Canadian paperboard in any overseas markets during the first nine months of the year.

Exports of book, writing and coated papers in 1953 fall below corresponding 1952 levels, said G. M. Brain, chairman of the Book, Writing and Coated Papers Section.

Technical Section highlights

The program included 55 papers and 12 group discussions. A. L. Fraser, Manitoba Paper Co., chairman of the Technical Section, was general chairman.

The fundamental design features of an industrial power plant were outlined by F. W. Arbue and A. R. Chapman, Stone & Webster Engineering Corp., Boston, emphasizing the necessity of making a thorough technical analysis and economic evaluation of the various components of the power plants. Of equal importance, they said, is the proper integration of design of the plant itself with respect to all mill services.

G. H. Mikkelborg, Ontario Paper Co., discussed the reduction of woodhandling costs through better planning and layout of woodyards. He predicted that standardization of yard conveyors and stackers would not only reduce the operator's time required for such work, but would also reduce the costs of this operation. He suggested that a thorough study be made that would result in a recommendation for the general type of yard layout required for economical handling, the number of conveyors and stackers needed for various sizes of mills, and the types of this equipment required to handle the desired number of cords per hour.

Experience with liquid sulfur dioxide in the manufacture of chemical pulp was described by R. D. Litchfield. The liquid sulfur dioxide system is much easier to operate than the sulfur burning system, according to Mr. Litchfield. This operation can be started up and closed down in five minutes, as against five hours required in the sulfur burning process, so that cleaning and repairs can be done during the week rather than during periods when the mill is not operating.

The advantages of screening with the Vibrotor screen were discussed by Sven Fahlgren, Bird Machine Co. Among the advantages he listed: (a) floor space reduction to one-fourth of

conventional requirements, (b) the reduction of thickening equipment due to high density screening and (c) the use of smaller pumps and smaller size piping due to a smaller white water volume needed for dilution.

Drying and ventilating

J. C. Jordan, Abitibi Power & Paper Co., reported on the successful installation and operation of closed hoods around the dry section of three newsprint papermaking machines. The enclosed hood installation has been in operation for one year and has already proved to be very effective.

Among the advantages resulting from a completely enclosed system Mr. Jordan listed the following:

(1) a significant reduction of steam consumption per ton of paper; (2) an increased drying rate which permits an increase in production; (3) recovery of heat from the room supply air, felt supply air, and from processed water; (4) reduction of the volume of air necessary to carry the moisture removed from the paper; (5) improved working conditions in the machine room, and (6) facilities to conduct experiments with the view to improving operating efficiency and reducing capital expenditures for paper machine installations.

G. J. Chalmers, Ross Engineering, described a method for testing the performance of the dryer section of a paper machine and presented results obtained from tests on (a) a newsprint machine with an open canopy hood and no economizers, (b) a newsprint machine equipped with an open type canopy hood and four single-pass economizing units with supply and exhaust fans, and (c) a machine equipped with a totally enclosed hood, complete with double pass economizers and high-velocity felt supply systems. The results show that the drying rates in pounds of water per hour per square foot of paper dryers for the completely enclosed machine is approximately 17 per cent greater than that of the open hood machine equipped with economizer and 28 per cent greater than that of the open hood machine without economizers.

Mr. Chalmers suggested that the answer to increased drying capacity should not lie in the installation of more dryers to occupy more space and consume more power. Equipment should be developed to occupy less space, operate more efficiently, and consume less power. The emphasis today is on increased production, and often the bottleneck to further increases in machine speeds is the inadequate drying capacity of the drying section.

Presenting the results of a study on investigations of comfort conditions in newsprint paper machine rooms, H. W. Rogers, Canadian Blower & Forge Co., Ltd., listed the major sources of moisture at high and troublesome temperature levels as follows:

(1) Hood spill accounts for about 33 per cent of the trouble encountered; (2) basements, adjoining buildings, or operations for approximately 20 per cent; (3) Bird screen for about 20 per cent; (4) wire pit and fourdrinier for about 12 per cent, and (5) miscellaneous other sources for about 15 per cent of the troubles encountered.

For fairly simple and reasonable corrective measures, the following recommendations were made:

1. Hood spill — (a) proper hood design; (b) proper hood maintenance; (c) dropping hood curtains; (d) totally enclosing the dryer section.

2. Adjoining buildings, basements, operations, etc. — (a) maintain proper air balance in the machine room; (b) provide an air supply system to the sources of trouble; (c) passageways and entrance doors should be kept closed.

3. Bird screens — adequate hooding or enclosure and the use of exhaust air from this area and a balanced supply of dry air.

4. Wire pit and fourdrinier — enclosing the side of the fourdrinier and using a forced exhaust system.

5. Miscellaneous other sources — corrective measures can be taken by spot cooling and if necessary by supply of replacement air.

Fine papers

Richard Tutt Jr. discussed the application of the Sveen glue system and presented figures showing substantial savings in fiber, chemicals, and filterable solids resulting from the use of such a system.

R. D. McCarron, Morningstar, Nicol Inc., reported that mannogalactan additives provide an extra few points in mullen or tensile, make possible an increase in machine speed and production at lower over-all costs, and give an increase in filler retention. The principal source of mannogalactan is locust bean gum. The amount of gum varies from five pounds per ton to 15 pounds per ton based on machine production.

Discussing the use of starches as aids in the production of papers containing mineral fillers, N. L. Cushing, Stein Hall & Company Inc., stated that the amount of starch required to hold strength and to promote filler retention is a controversial point and must be examined by each mill in its own operation. As little as 10 lbs. per ton and as much as 140 lbs. per ton has been used. Under normal conditions 40-60 lbs. per ton would seem to be an economical range.

Harvey V. Berg, National Aluminate Corp., discussed the use of sodium aluminate in paper making and presented figures to show appreciable reduction in size and alum through the use of sodium aluminate. The minimum size reduction was 8.65 lbs. per ton, the minimum alum reduction was 10 lbs. per ton, resulting in a minimum net saving of 82 cents per ton when using 5.5 lbs. aluminate.

Fundamental research

Bengt Leopold, Industrial Cellulose Research Ltd., reported on the lastest developments in lignin research in Sweden. The results to date show that softwood lignin consists of guaiacyl propane groups connected to each other through ether and carbon-carbon linkages, probably randomly distributed in approximately equal proportions. All or most of the reactive groups are located at the alpha carbon atoms of the side chains and consist of hydroxyl or ether groups. Ether linkages, which are hydrolyzed or sulfonated under acid conditions only, join the lignin to the rest of the cell wall, i.e. to other lignin molecules or carbohydrate molecules.

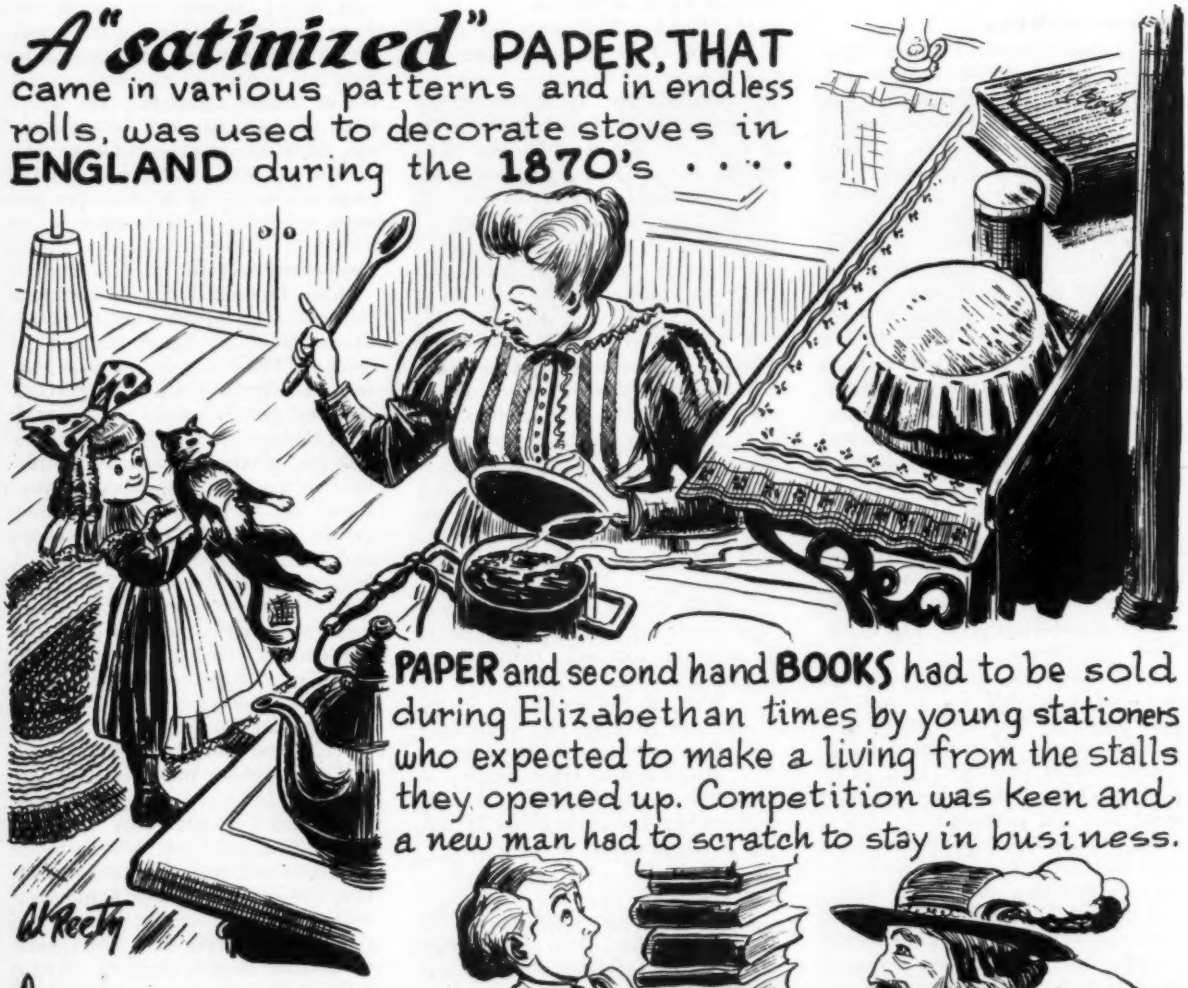
Describing chlorine dioxide pulping of jack pine and black spruce chips, F. G. Hurtubise, Industrial Cellulose Research Ltd., reported a relatively high yield (65 per cent) of white pulp. This pulp was low in lignin and resin and high in pentosan content, indicating thorough lignification with very little destruction of the carbohydrate components. The amount of chlorine dioxide required for this pulping method was 50 per cent of the weight of the wood, which makes the process far too costly for commercial application at present.

W. H. Rapson, University of Toronto, described a continuous process for chlorine dioxide manufacture.

C. B. Purves, McGill University, discussed the action of chlorine dioxide on lignin and model substances. A. G. Newcombe, M. Digman, and H. Borden Marshall, of the Ontario Research Foundation, presented a paper on the condensation of phenol with ligninsulfonic acid.

At a dinner, honoring the Section's founders and honorary life members, Dr. John S. Bates, consulting engineer, Montreal, and a founder, first chairman, and honorary life member of the Section, gave the second annual Stadler Memorial Address entitled "Life Begins at Forty".

A "satinized" PAPER, THAT came in various patterns and in endless rolls, was used to decorate stoves in ENGLAND during the 1870's . . . .



PAPER and second hand **BOOKS** had to be sold during Elizabethan times by young stationers who expected to make a living from the stalls they opened up. Competition was keen and a new man had to scratch to stay in business.

A disposable, water-repellent, fire-resistant paper work cap, made of heavy kraft paper, treated with neoprene, has proved economical for shop use and popular with workman. It is conventional in shape and has a sweatband of leatherette.

odd Bits

During the days when mediaeval SARACENS controlled Mediterranean traffic, so little papyrus trickled through Western Europe from the East, that what did get through was used for lamp wicks and candles rather than used for writing material.

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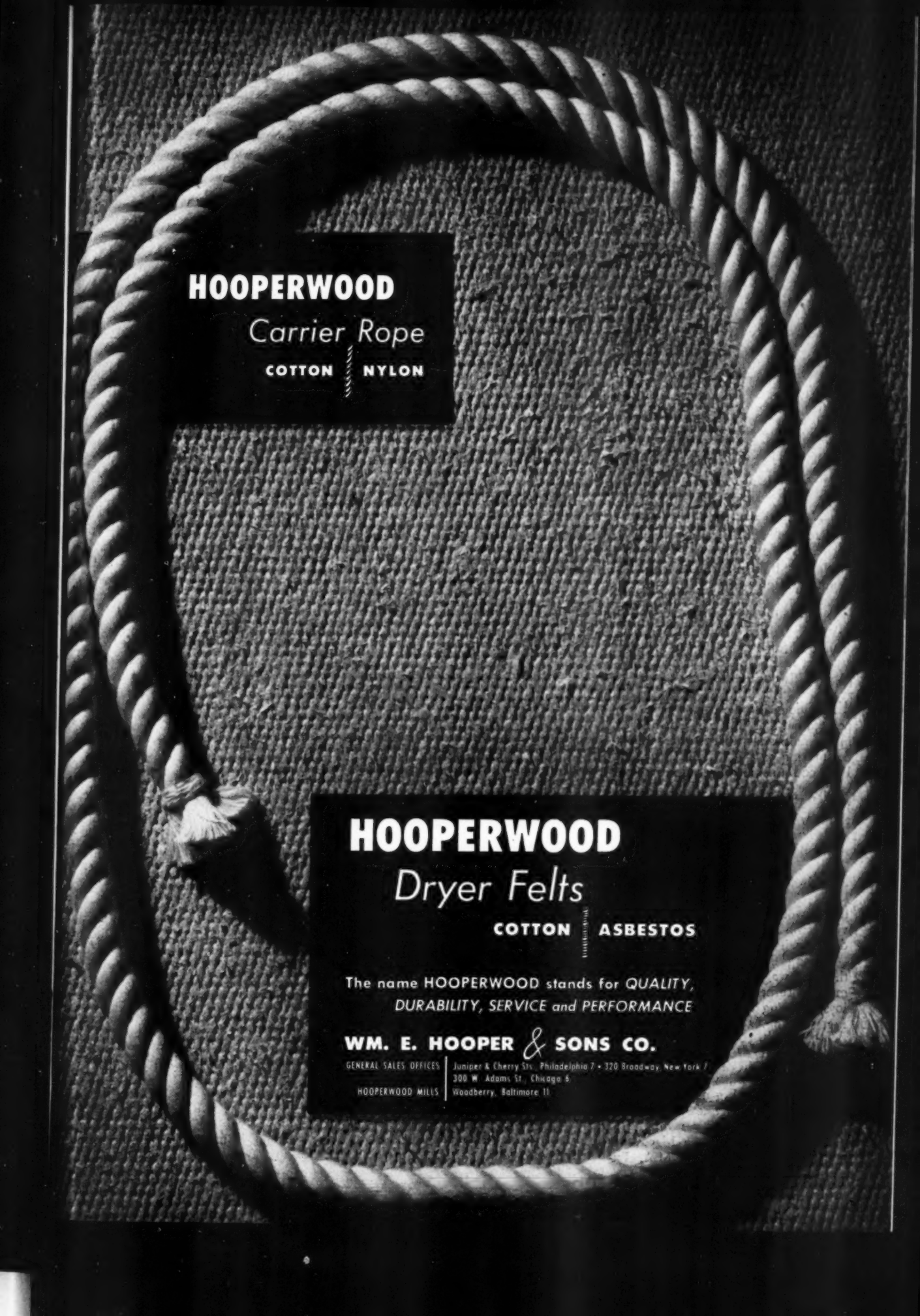
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The Paper Industry Allied News

PROBLEMS ENCOUNTERED in the paper and pulp industry and their relation to suppliers of starches and adhesives was the subject of a talk presented recently by E. W. Tinker at a staff meeting of National Starch Products Inc.; above, Mr. Tinker, executive secretary of the American Paper & Pulp Association, discusses the question with Frank Greenwall, president of National Starch Products

Eastwood-Nealley Booklet Depicts Wire Manufacture

The step-by-step operations in the manufacture of a fourdrinier wire are shown in a booklet recently published by Eastwood-Nealley Corp. of Belleville, N. J. The publication, "Fourdrinier Wires and the Human Factor," was sent to all United States pulp and paper mills during the week of February 1.

In announcing the booklet, the firm pointed out that "Little is known, even in the pulp and paper industry, about the making of a fourdrinier wire. At Eastwood this manufacturing process is carried out in a fully integrated plant. We make our own warp and shute wire, as well as weave it into the fourdrinier screens. It seemed worthwhile to us to provide our customers with a booklet containing a collection of photographs depicting step by step some of the principal operations involved in this little-known but vital business of manufacturing a fourdrinier wire."

Among the operations shown are those of weighing the metals for the melting furnaces, the analysis of alloys, drawing the wire, physical testing, weaving.

Allied News Notes

Hudson-Sharp Machine Co. of Green Bay, Wis., will exhibit several of its wrapping machines at the A.M.A. Packaging Show at Atlantic City April 5-8. . . . An important feature of **Mount Hope Machinery Co.'s** display at the A.T.M.A. Exhibition April 26-30 will be a demonstration of the firm's complete line of free wheeling expanders, along with other equipment for handling cloth, paper and plastics.

D. J. Murray Mfg. Co. has established a $1,000 fellowship at Western Michigan College, Kalamazoo, for use in promoting research in pulp and paper. . . . **E. I. du Pont de Nemours & Co.** has announced an improved method of bleaching kraft and other chemical pulps with peroxide; the method comprises an acid treatment prior to the peroxide bleaching. . . . **Kewanee-Ross Corp.** of Kewanee, Ill., will be represented in the St. Louis territory by Debco Equipment Co., Inc. . . . **Panellit Inc.**, designers, engineers and manufacturers of industrial automatic control and information systems, has begun construction of a plant in Skokie, Ill., as the first step in a major expansion and consolidation program.

Poole Foundry & Machine Co. of Baltimore has named Parry Engineering Co. of New York, N. Y., its sales representative for Poole flexible shaft couplings. . . . **Binks Mfg. Co.** of Chicago has scheduled a new series of one-week spray painting schools: April 5-9, May 3-7, and June 7-11. . . . **General Aniline & Film Corp.** and **General Dyestuff Corp.** have opened a new branch building in Chattanooga, Tenn., to serve the expanding dye and chemical business in the area.

Allied Personalities

Karl F. Landegger

Fred Schwartz

Karl F. Landegger, president of Parsons & Whittemore Inc., has been elected vice chairman of Black-Clawson Co. of Hamilton, Ohio. . . **Fred Schwartz** has been promoted to chief engineer of Hudson-Sharp Machine Co. of Green Bay, Wis. . . . **John H. Draper Jr.** has been named president of Draper Brothers Co. of Canton, Mass., following the resignation of Copeland M. Draper.

Ray L. Corcoran has succeeded **Clifford D. Siverd** as eastern regional sales manager for the Pigments Division of American Cyanamid Co.; Mr. Siverd has been appointed assistant to the general manager. . . . **Bancroft W. Henderson** has been named director of sales for the Organic Chemicals Division of American Cyanamid. . . . **E. S. Underwood** has joined the San Francisco sales office of General Dyestuff Corp. as sales representative for the Antara Chemicals Division.

R. R. Newquist

Jack Faulks

Ralph R. Newquist, formerly executive vice president, has been named president and general manager of the Roots-Connersville Blower Div. of **Dresser Industries Inc.** . . . Jack Faulks has joined the sales department of **Paper Machinery & Research Inc.**, Roselle, N. J. . . .

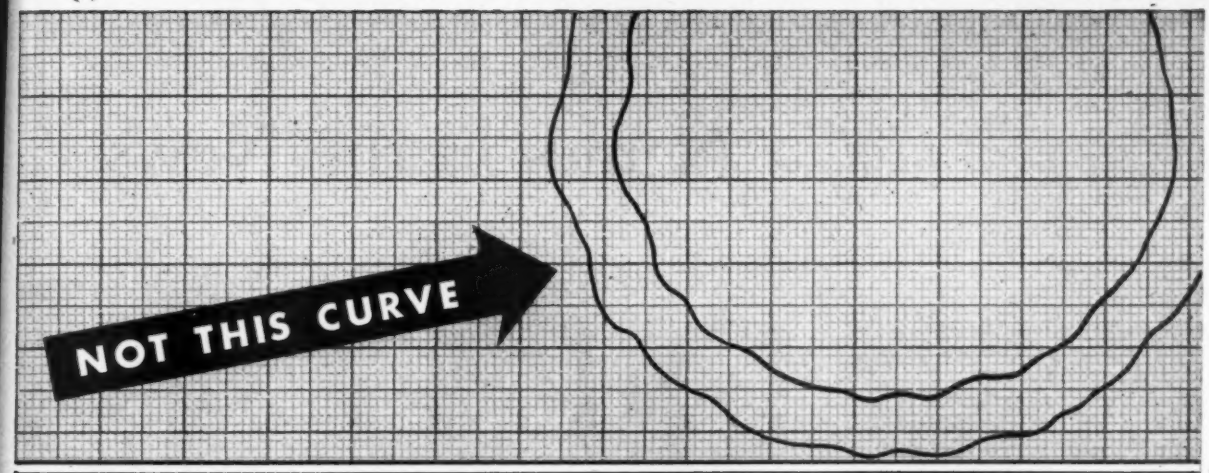
Downingtown Mfg. Co. has made changes in the sales and engineering departments: **Harry C. Merritt,** executive vice president; **Jack C. Harper,** chief engineer; **Emerson N. Glauner Sr., Richard W. Polleys** and **Jacob V. Edge,** assistant sales managers; **F. L. Wooten,** sales representative, and **C. H. Mullen** and **Joseph W. Martin,** sales engineers.

Michigan Steel Casting Co. has reported the following appointments: **Jack Bean,** president and general manager; **Harold Schroeder,** vice president for operations; **Walter Hakin,** vice president for sales, and **Elry Christensen,** sales manager. . . . **Garth S. Thompson** has been made president and general manager of Misco Fabricators Inc. of Detroit.

Ronald G. Goodwin, director of sales engineering for PANDIA Inc., is visiting PANDIA representatives in Europe, while **L. G. Durant,** vice president, is making a similar tour of Japan.

1954

NOT THIS CURVE



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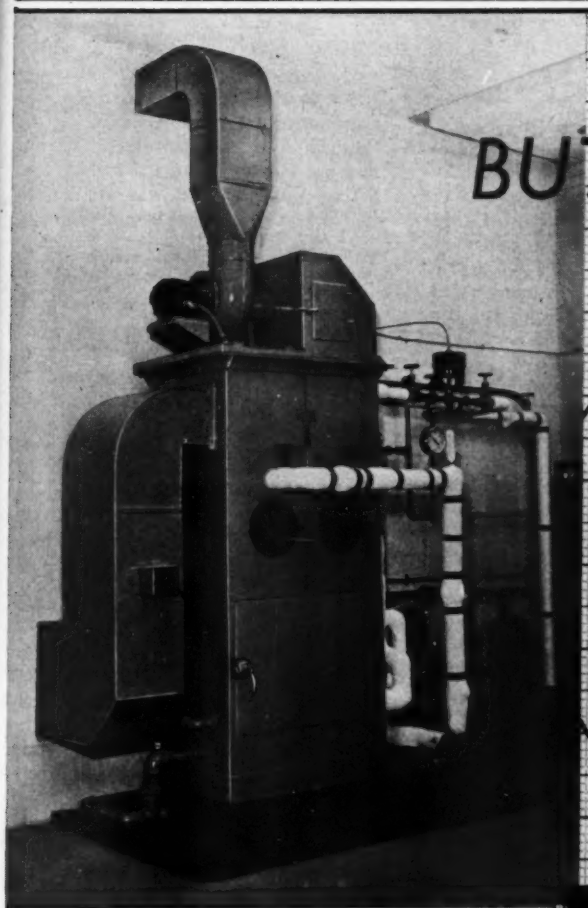

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The Paper Industry Names in the News

Bannister Named Bowaters Pulp Mill Superintendent

The appointment of T. C. Bannister as sulfate pulp mill superintendent was announced recently by Bowaters Southern Paper Corp. at Calhoun, Tenn.

Mr. Bannister was formerly pulp mill superintendent for Hollingsworth & Whitney Co., Boston. A graduate of the University of Alabama, he was at one time associated with Crossett Paper Mills in Arkansas.

The new Calhoun newsprint mill, now in the final stages of construction, is expected to go into operation during the second quarter of this year.

T. C. Bannister

J. R. Boykin

Boykin Promoted by Stone

J. R. Boykin has been promoted to the post of general manager of Stone Container Corp.'s paper mill division at Mobile, Ala. The mill produces boxboard for the southern market and linerboard for the firm's own corrugated box plant.

A graduate of the University of Alabama, Mr. Boykin entered the paper industry after service in World War II; first, as secretary-treasurer of Mobile Paper Mill Co. and then as resident manager for Stone-Mann Paper Co. and the present owner, Stone Container.

In another Stone appointment, Robert M. Fuller, management engineer, has been named to the newly created post of assistant vice president. Formerly associated with Helmick & Associates, management engineering consultants in Alliance, Ohio, he has been put in charge of cost reduction and methods engineering for all the firm's facilities.

A. W. Hoffman

F. C. Costello

Gair Container Names Two

Two recent appointments have been announced by William T. May Jr., vice president for container operations of Robert Gair Co. Inc. Alfred W. Hoffman has been named quality control manager for the container divisions, while Floyd C. Costello was made assistant general production manager.

Mr. Hoffman has been technical director of Container Laboratories Inc. for the past 18 years. Mr. Costello was formerly manager of Gair's Teterboro (N. J.) Container Division. He joined a predecessor firm, Piermont Paper Co., in 1913 as a stenographer.

Robertson F. Alford has been named vice president and sales manager of the paperboard division of Continental Paper Co., Ridgefield Park, N. J. He has been secretary and assistant treasurer of the firm for the past three years.

R. F. Alford

Dr. G. B. Creamer

Dr. George B. Creamer has been appointed manager of technical service for Rayonier Inc., replacing Dr. Maurice E. Kinsey, who resigned recently. Prior to his appointment, Dr. Creamer was a research supervisor at Shelton, Wash.

R. W. Croucher Retires

R. W. Croucher, safety officer for Minnesota & Ontario Paper Co. and its subsidiaries, has announced his retirement after 30 years' service with the International Falls, Minn., firm. He will make his home at Steamboat Lake, Minn.

Long associated with the safety movement, Mr. Croucher has been active in the affairs of the Pulp and Paper Section of the National Safety Council. At the November section meeting held during the National Safety Congress, he was elected to the section's statistical committee.

Waste Paper Council Elects

Recently elected members of the joint committee of the Waste Paper Utilization Council are: D. W. Bergstrom, treasurer of Bergstrom Paper Co.; Paul Joseph White of Great Eastern Packing & Paper Stock Corp.; B. J. Taymans of Printing Industry of America Inc., and D. F. Morris, first vice president of the Mead Corp. The joint committee serves as the Council's board of directors.

Two Named by H & W

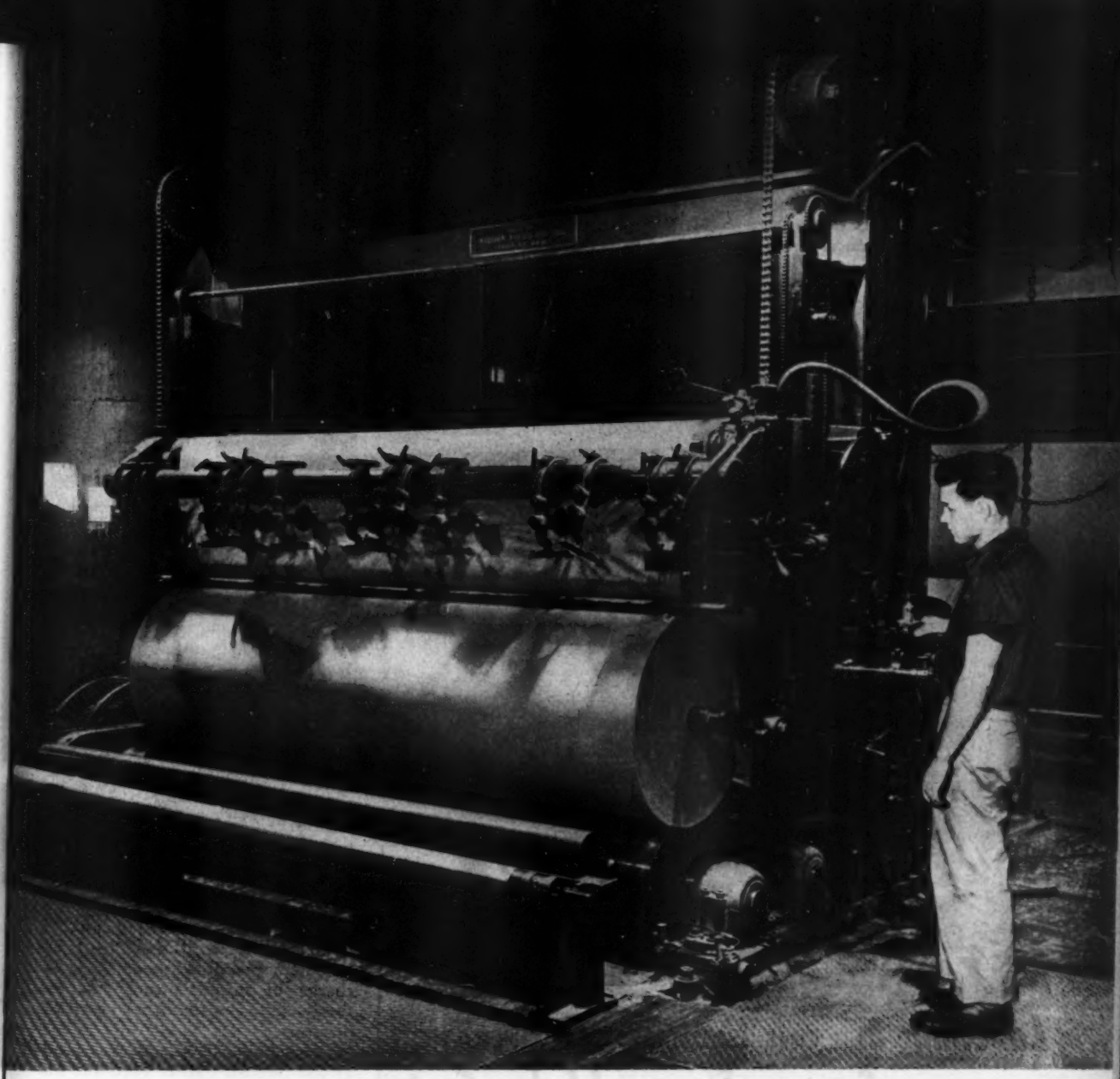
Thomas M. Barry, manager of northern mills for Hollingsworth & Whitney Co., has announced that Dr. August S. Erspamer has been named assistant manager. Dr. Erspamer, formerly assistant to the resident manager of St. Helens Pulp & Paper Co., will make his headquarters in Winslow, Maine.

In another H & W appointment, Alfred M. Heald was made director of research and development. Formerly associated with both Scott Paper Co. and Marathon Corp., he will also headquarter at Winslow.

Escanaba Promotions

The following promotions were announced recently by Escanaba Paper Co. at Escanaba, Mich.: Oliver C. Christiansen, formerly paper mill superintendent, assumes the duties of superintendent, including responsibility for the groundwood mill, in addition to the paper mill and yard.

Clark Greenles, formerly assistant paper mill superintendent, is now paper mill superintendent. Dwayne



Kidder Senior Superspeed Winder in a Paper Mill — making "ready to ship" dust-free rolls.

You need all 3 in a modern mill winder

1. *High Production* — Designed for continuous duty, high-speed operation, with a minimum of down time.
2. *Shear Cutting* — Kidder has always employed the shear-cut method for accurate, long life, dust-free slitting, assuring positive roll separation.
3. *Low Maintenance* — Gearless design — ample capacity anti-friction bearings — dynamic balancing — long-life shear slitters — all contribute to low maintenance and uninterrupted operation.

Since W. P. Kidder built his first Slitter and Winder in the 1890's, a continuous program of engineering development has kept Kidder ahead of the field. Kidder was the first to offer gearless drives, pneumatic counterbalance of the rider roll, and among the first to offer all-electric tension control and electric eye side guiding.

For leaflet giving details of these modern Slitters and Winders, write to the Kidder Press Company, Dover, N. H.

Kidder

3 POINT SLITTERS

High Speed Cutting
Dust-Free Operation
Easy Roll Separation

S. Burak, formerly assistant to the groundwood superintendent, is now assistant groundwood superintendent. Robert E. Barron, assistant to the personnel director, has been made assistant personnel director. Carl V. Frans, assistant to the purchasing agent, is now assistant purchasing agent.

Changes at Marinette

Fred Herbolzheimer, technical control director for Marinette Paper Co. at Marinette, Wis., recently announced organizational changes in his division.

Arnold Forslund, paper process control technician, becomes water control technician. Stanley Barnes Jr., now process control technician, becomes materials control supervisor. The former materials control supervisor, Robert G. Schacht, has been made purchasing assistant.

In changes in the Menominee groundwood operations, Theodore N. Folstad, William C. Krueger, Earl F. Harpt and LeRoy Boettcher have been promoted to groundwood shift supervisors under the direction of Stuart Lang.

Do Your Wrapping and Labeling in ONE AUTOMATIC OPERATION — Save on Time and Labor Costs

THIS MACHINE DELIVERS TEN WRAPPED, SEALED AND LABELED REAM PACKAGES PER MINUTE.

Fully automatic REAM WRAPPER and LABELER MACHINE • Only one operator required • Handles sizes ranging from HEAVIER through 23 x 35, bulk 1" to 3". Adjustable to your specific requirements • Larger sizes on request.

LABELING UNITS can be furnished for installing in efficient combination with your present wrappers

Our engineers are always available for consultation on your present problems or for special developments

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Frank C. Gerhart has been named to the newly created post of advertising manager for the Mead Corp. The appointment was announced by H. Warren Kampf, president of the Mead Sales Co.

F. C. Gerhart

G. E. Brombacher

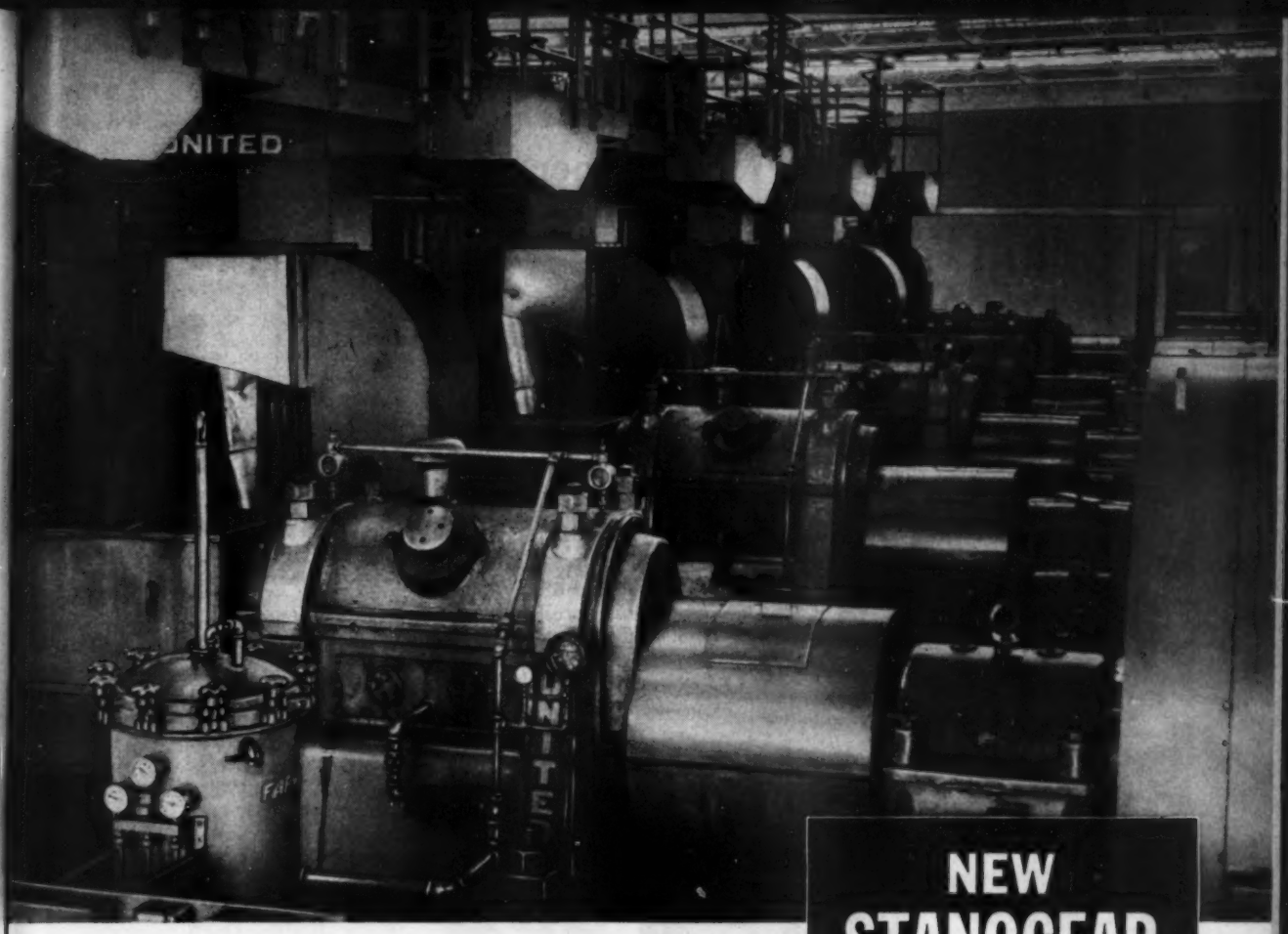
George E. Brombacher Jr. has been appointed director of purchasing for the Mead Corp. He has been active in corporation purchasing since 1952 and is responsible for the negotiation of purchase contracts for wood pulp, heavy chemicals, and other major items of supplies and equipment requiring central handling. A 20-year veteran with Mead, he began his career as a tour timekeeper with the Chillicothe Division.

Kimberly-Clark Appointments

Forrest H. Werling has been named manager of mills for Kimberly-Clark Corp., Neenah, Wis. He was formerly manager of the Neenah mill. Mr. Werling assumes responsibilities held since 1947 by F. S. Seaborne, now vice president in charge of manufacturing and recently elected to the firm's board of directors.

Succeeding Mr. Werling as head of the Neenah mill is Theodore H. Perry, who has been superintendent of Kimberly-Clark's creped wadding operations at Niagara Falls, N. Y., for the past 12 years. Mr. Perry has been with the company 23 years, first as a member of the engineering department and later as a member of the Neenah staff.

Mr. Werling joined K-C in 1927 in the research department and later at Niagara Falls. He became a tour foreman at the Badger-Globe mill in 1935 and day foreman in 1936. He was later made superintendent of manufacturing operations at both the Lakeview and Badger-Globe mills and was named manager of the latter in 1942. Several years later he moved into what is now the office of manager of mills and acted as an assistant until 1947, when he became manager at Lakeview and Badger-Globe (now known as the Neenah mill).



NEW STANOGEAR REG. U. S. PAT. OFF. **Compounds**

NOW . . . 7 ways better for extreme-pressure lubrication . . .

New and improved STANOGEAR Compounds have been developed to meet the requirements of an increasing variety of tougher extreme-pressure lubricating jobs found throughout industry, today. The result of several years of special research and field test work, these outstanding products have proved in actual service their ability to provide these important advantages:

1. Higher load carrying capacity. Use of improved extreme-pressure additives in STANOGEAR Compounds provide a greater anti-weld property. This results in the higher load carrying capacity which these products have demonstrated in actual service.

2. Superior retention of load carrying capacity. In service tests, STANOGEAR Compounds have proved superior to conventional extreme-pressure lubricants in ability to maintain a high load carrying capacity over extended periods of service.

3. Freedom from objectionable deposits. Appropriate base stocks and additives give STANOGEAR Compounds a high resistance to oxidation, thus minimize the formation of deposits.

4. Excellent storage stability. STANOGEAR Compounds contain compounding ingredients which assure excellent stability both in service and storage.

5. Good water separation. STANOGEAR Compounds have demonstrated their superiority to ordinary extreme-pressure lubricants in ability to provide good water separation.

6. Anti-foaming. Under adverse operating conditions, the anti-foam agent in STANOGEAR Compounds has prevented foaming troubles.

7. Versatility. A unique combination of additives in STANOGEAR Compounds equips these products for various industrial gear applications where extreme-pressure lubricating properties are necessary. To meet varying viscosity requirements, STANOGEAR Compounds are available in eight viscosity grades.

The Standard lubrication specialist in your area of the Midwest will be glad to give you more information about the new STANOGEAR Compounds. You need only phone your local Standard Oil office. Or write: Standard Oil Co., 910 South Michigan Avenue, Chicago 80, Illinois

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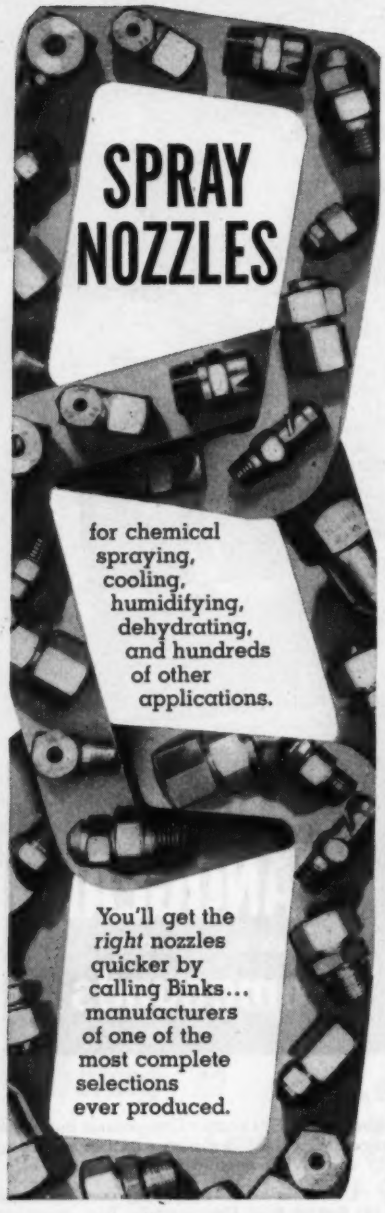
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The Paper Industry Necrology

George W. Sisson Jr.

George Wing Sisson Jr., prominent in the paper industry for many years and a former president of the American Paper & Pulp Association, died February 7 at Madrid, N. Y. He was 92.

Mr. Sisson was nationally known for his work in forestry, forest products and agriculture. Chairman emeritus of Racquette River Paper Co., he was a former trustee of the New York State College of Forestry at Syracuse. Mr. Sisson joined Racquette River in 1901 and became its president in 1913.

G. W. Sisson Jr.

A. B. Hettrick

Ames Bartlett Hettrick, 49, an executive of American Cyanamid Co. with which he had been associated for nine years, died the latter part of December. Only recently he was appointed assistant manager of the company's newly formed Pigments Division.

S. W. Murphy

Stephen W. Murphy, 72, former secretary-treasurer and general manager of Riverside Paper Corp., Appleton, Wis., died January 15 at his Appleton home. Son of one of the founders of the firm, Mr. Murphy sold his interest in 1925. At the time of his death he was on the sales staff of Appleton Wire Works Inc.

C. T. Crocker

Charles T. Crocker, president of Crocker, Burbank & Co. Association of Fitchburg, Mass., died January 29 while vacationing at Pinehurst, N. C. He was 87.

Mr. Crocker, grandson of the founder, had been president since 1931. He began his long association with the firm as a letter copier during the presidency of his father, Charles T. Crocker. He later served as papermaker, purchasing agent, director and vice president. Mr. Crocker had long been interested in water conservation and storage and was one of the incorporators of Nashua River Reservoir Co. He had been its president since 1928.

E. A. Oberweiser

E. A. Oberwieser, 74, board chairman of Fox River Paper Corp. in Appleton, Wis., died January 25. He was one of the founders of Fox River in 1938.

A native of Menasha, Mr. Oberweiser started his career in the paper industry with George A. Whiting Paper Co. In 1908 he was named general manager of Whiting-Plover Paper Co. and in 1930 became its president. Mr. Oberweiser was known nationally in the industry and had been a member of the executive board of the Writing Paper Manufacturers Association.

D. M. Myers

David Moffat Myers, prominent consulting engineer and a specialist in the field of industrial power supply, died in Larchmont, N. Y., January 20. He was 75.

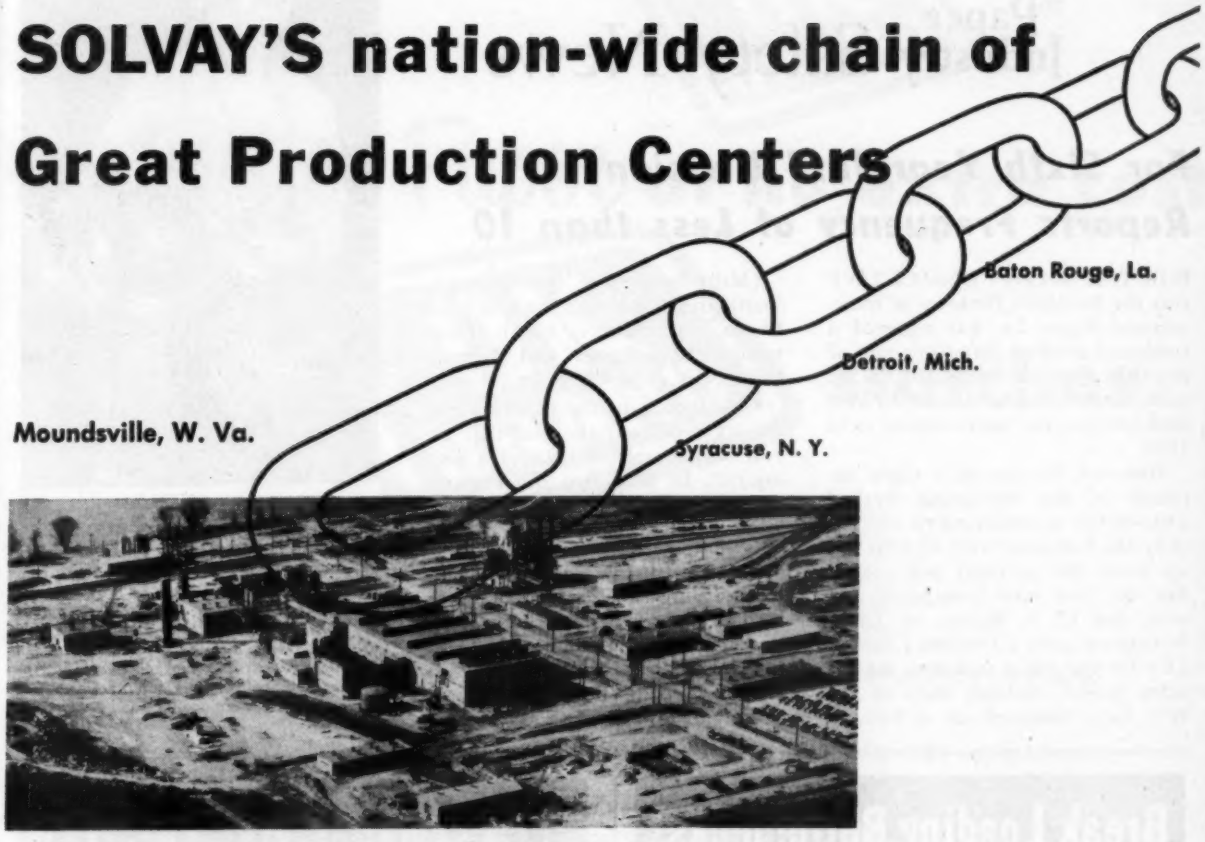
Mr. Myers was a native of Owasco, N. Y., and a mechanical engineering graduate of Columbia University. He began his career as a mechanical engineer for U. S. Leather Co. Later he was a member of the firm of Myers & Addington, and at the time of his death was a consultant with Seelye Stevenson Value & Knecht. (Mr. Myers had been a contributor to THE PAPER INDUSTRY, his series on Paper Mill Power having appeared during 1951 and 1952.)

T. W. Stanley

Thomas William Stanley, 70, general manager and former superintendent of Dresden Paper Mills Co., Dresden, Ohio, died January 21.

Associated with the paper industry for nearly 50 years, Mr. Stanley was a member of the Miami Valley Division of the Superintendents Association; president of the Dresden Building, Loan and Savings Co., and vice president of the Muskingum County Board of Education.

The Newest Link in SOLVAY'S nation-wide chain of Great Production Centers



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The Addition of this New Producing Center to the four points from which SOLVAY has been shipping carload quantities places SOLVAY in an even better position to give you quicker, more efficient deliveries.

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Chlorine • Caustic Soda • Monochlorobenzene • Para-dichlorobenzene • Ortho-dichlorobenzene

The Paper Industry Safety News

For Sixth Year Int'l Division Reports Frequency of Less than 10

FOR THE SIXTH CONSECUTIVE year the Northern Division of International Paper Co. has reported a combined accident frequency rate of less than 10.0. During 1953 the six mills in the division suffered 68 lost-time injuries, the same number as in 1952.

However, because of a slight decrease in the man-hours worked (10,046,599 as compared to 10,252,065) the frequency rate of 6.76 was up from the previous year's 6.63. For the first nine months of last year, the U. S. Bureau of Labor Statistics reports a frequency rate of 13.1 for the paper industry; for the same period, member mills of the NSC had a combined rate of 8.62.

(Mills comprising International's Northern Division are those at York Haven, Pa.; Palmer, North Tonawanda, Ticonderoga and Niagara Falls, N. Y., and Chisholm, Maine.)

Outstanding in the experience of the six mills was the fact that the year was completed without a fatal injury. In only two other recent years—1944 and 1949—was no fatality reported.

Chisholm and Ticonderoga outstanding

According to a report recently issued by the Industrial Bureau of the division, the Chisholm and Ticonderoga operations earned special mention. At both, the frequency and severity rates appear to be the best

Saved by a helmet . . .

LIVED TO TELL IT—The value of safety hats was clearly demonstrated to Tom Cangianelli recently when he was at work with a crew cleaning slag from a smelter at West Virginia Pulp & Paper Co.'s mill at Luke, Md.; a 6-lb. piece of slag fell from above, striking his Mine Safety Appliance Co. helmet, the top of which was pierced; Mr. Cangianelli's injury was very minor

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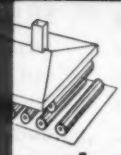

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in their history. And York Haven continued its consistent performance, with the lowest frequency rate of the six mills; it rated second in severity.

Over the entire division, both the groundwood department and the beaters showed marked improvement. The former had three injuries in 1953, compared with eight the year before; the latter recorded one, as compared to four in 1952. On the other hand, finishing and paper handling and supercalenders contributed 19 injuries, with paper machines and repairs reporting 30. In other words, these four departments accounted for 49 injuries, or more than 70 per cent of the total reported.

There were nine hernias, as compared to four in 1952. And an employee at the Niagara mill was severely injured in a fall. As at the present it appears that a permanent total-class injury will result, a penalty charge of 6000 days has been included in the 1953 experience.

Continuing as chief offenders in causing injuries are falls of persons, falling objects, and handling objects.

Personnel in repair work suffered the greatest number of injuries—20. Other injuries according to occupation were as follows: finishing and paper handling, 12; paper machines, 10; supercalenders, 7; outdoor miscellaneous, 5; groundwood, 3; indoor miscellaneous, 3; technical control, 2; wood handling, sulfite or soda, beaters, power plant (electric), office and clerical, and cores, one each.

Leading in injury type were cuts-bruises-lacerations and sprains-strains, each with 18. Other types were: breaks and fractures, 15; hernias, 9; amputations, 4; infections, 2, and burns-scalds and miscellaneous, one each.

The handling of objects was the cause of 22 accidents. Other causes were: falling objects, 14; falls of persons, 13; miscellaneous, 11; power working machinery, 4; prime movers, 3, and vehicles, one.

The standing of the individual mills (with hours of exposure in parentheses) was as follows: York Haven (686,260) with a frequency rate of 2.91; Chisholm (1,726,397), 3.47; Ticonderoga (1,512,478), 5.95; Niagara (1,864.730), 7.51; Tonawanda (1,067,049), 8.43, and Palmer (3,189,685), 8.78.

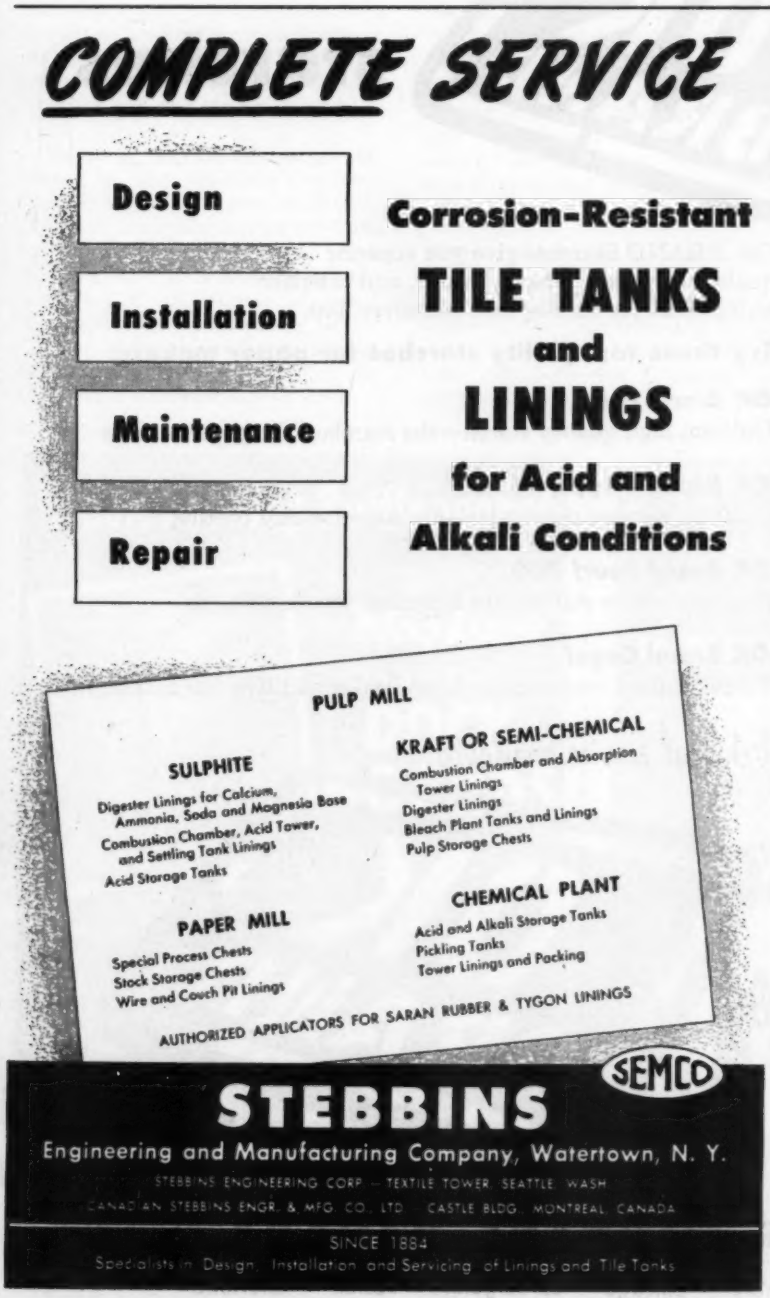
Training Program Essential to Safety, Meredith Tells NSC

The value of training is under-estimated, especially in safety programs, according to Robert K. Meredith, safety director for West Virginia Pulp & Paper Co. at Tyrone, Pa. In an editorial appearing in the *Safety News Letter* published by the Pulp and Paper Section of the National Safety Council, he warned that "to have a successful safety program, training is essential.

"The average safety director fully realizes that about two out of three accidents involve unsafe acts, as well as unsafe conditions," Mr. Meredith continued. "From a common sense point of view it is obvious that safety training is necessary to help eliminate the unsafe acts which contribute to so many accidents. The training job must be done by supervisors.

". . . A supervisor may be very capable in assuming the responsibilities of his job as related to the manufacturing end of the product, but how capable is he of eliminating accidents within the department or plant?

"An accident directly or indirectly affects production. Safety and production go hand in hand. The only way to eliminate unsafe acts or unsafe conditions is through training the supervisors in safety to do a better job."



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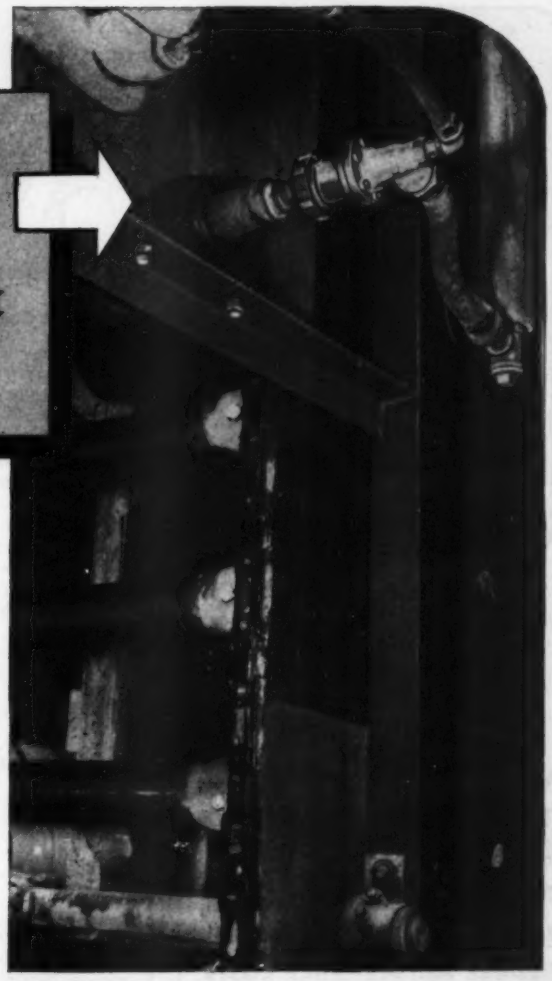
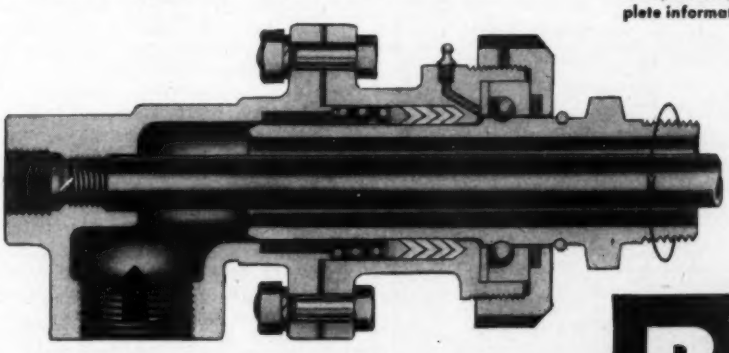


The above picture shows one of the Barco joints used by the Lloyd A. Fry Roofing Co., Summit, Ill., on a paper coating roll. For complete information on Barco Revolving Joints, send for Bulletin 300.

Says CHIEF ENGINEER
Francis Nelson of
Lloyd A. Fry Roofing Co.,
Summit, Illinois

■ Operating engineers throughout the country are reporting the benefits they receive from Barco's new *improved* Type IBR Revolving Joints. These are benefits that come from the *correctness* of Barco's design. There is minimum increase in torque (friction) under increased steam pressure—thanks to Barco's exclusive "CTR" V-type seal rings and ball bearings. Also note the wide spacing between bearings which holds bearing loads and wear to a minimum.

Barco builds a complete line of standard revolving joints in sizes ranging from ½" to 2" and special in sizes to 5". Pressures to 250 psi, steam, or 1000 psi, hydraulic. Speeds to 2500 rpm. *Barco Engineers are at your service; ask for recommendations.*



- Better Temperature Control where steam is used for heating rolls, due to better circulation.
- Free-Floating, Low Torque Installations.
- Up to 50% Power Savings.
- Exclusive "CTR" V-Type Seal Rings—*chemically inert.*
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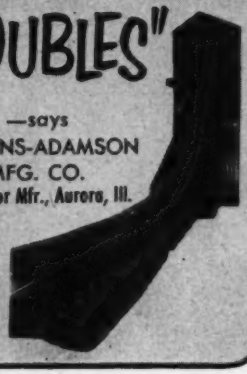

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The Paper Industry Patent Reviews

MELVIN NORD*

Process of Coating Paper

In the preparation of a coated paper, it is conventional to prepare a mixture of water and a pigment such as clay, together with a soluble pyrophosphate as dispersing and stabilizing agent. This mixture, known as a pigment slip (or clay slip) is then compounded with a binder or adhesive material to produce a composition known as a coating color. Considerable quantities of the binder are used, and its composition and characteristics are therefore of great importance in determining the quality of the finished paper. Important properties of the binder are that they must impart to the coating color or to the finished paper a high degree of brightness, smoothness and gloss, and a good finish and feel after calendering. In addition to these basic qualities required in coatings, there are various other characteristics that go far toward determining the value and utility of coating adhesives: (1) the coating color must flow smoothly and evenly so that it may be applied to paper at sufficiently high speeds to be economical in ordinary coating processes; (2) the coating must have high strength, to permit subsequent printing on the coated paper without "picking," and (3) the coating must have a high wet-rub resistance for uses in which the coated paper is treated with water, e.g. in off-set printing.

These qualities are obtained in U. S. 2,661,308-9, issued Dec. 1, 1953, to Julian L. Azorlosa, assigned to Hercules Powder Co. The binder used in this pat-

*Patent Attorney, 664 Putnam, Detroit, Mich.

Other Patents of Interest to the Paper Industry

Subject	*Inventor or Assignee*	*Patent No.*	*Date*
Adjustable cylinder papermaking machine	Pusey & Jones Corp.	2,658,428	11/10/53
Paperboard forming machine	Bernard A. Malkin	2,658,429	11/10/53
Papermaking machine	Samuel S. Stevens	2,658,430-1	11/10/53
Paper decurling apparatus	John R. Baumgartner	2,658,432	11/10/53
Box setting-up machine	Norfolk Paper Co. Inc.	2,658,433	11/10/53
Water seal for log barking drums	Ingersoll-Rand Co.	2,658,539	11/10/53
Adjustable dispensing closure for containers	William H. Henderson	2,658,658	11/10/53
Bottle carrier	Empire Box Corp.	2,658,659	11/10/53
Folding box	Clifford M. Keller	2,658,660	11/10/53
Paperboard box of the suitcase type	Hinde & Dauch Paper Co.	2,658,661	11/10/53
Reclosable carton	Waldorf Paper Products Co.	2,658,664	11/10/53
Method for making glass paper	Glass Fibers Inc.	2,658,848	11/10/53
Carton with handles	Ohio Boxboard Co.	2,659,524	11/17/53
Polygonal folded paperboard box	United States Automatic Box Machinery Co.	2,659,525	11/17/53
Automatic setup carton	Sutherland Paper Co.	2,659,526	11/17/53
Paper cup handle	Julius G. Liebenow	2,659,527	11/17/53
Feeding mechanism for wood pulp grinders	William Kennedy & Sons Ltd.	2,659,537	11/17/53
Preparation of photographic paper having good curl characteristics	Eastman Kodak Co.	2,659,680	11/17/53
Preparation of high-glaze waxed paper	Shell Development Co.	2,659,683	11/17/53
Method of forming multi-ply crinkled paper bags	Arkell Safety Bag Co.	2,660,100	11/24/53
Partitioned carton	Robertson Paper Box Co. Inc.	2,660,361	11/24/53
Covered tray	Waldorf Paper Products Co.	2,660,362	11/24/53
Collapsible box having interlocking end walls	Crook Paper Box Co.	2,660,363	11/24/53
Corner lock for corrugated fiberboard boxes	Anderson Box Co.	2,660,364	11/24/53
Fiber feeding and weighing mechanism	Houdaille-Hershey Corp.	2,660,393	11/24/53
Paper roll crimping machine	Canadian International Paper Co.	2,660,846	12/1/53
Means for defibrating and grinding paper pulp	Cornelius Laviste	2,660,934	12/1/53
Apparatus for forming fiber mats, including deckle boxes with white water return	Chapman Forest Utilization Inc.	2,660,935	12/1/53
Manufacture of containers from fiberboard	Vincent A. Hutt-Brenning	2660,971	12/1/53
Milk container	Gordon Leonard	2,661,138	12/1/53
Consumer type paperboard container	Lewis C. Brooks and Ira M. Jones	2,661,139	12/1/53
Bottle carrier	Morris Paper Mills	2,661,140	12/1/53
Laminated paper milk carton	Julius A. Zinn Jr.	2,661,141	12/1/53
Shipping container with carrying handle	Container Corp. of America	2,661,142	12/1/53
Frozen-food carton	Bloomer Bros. Co.	2,661,143	12/1/53
Method of superbleaching chemical pulp	Buffalo Electro-Chemical Co.	2,661,261	12/1/53

ent is a vinyl copolymer having as one vinyl component a compound having a masked carboxyl group which can be regenerated by hydrolysis. The carboxylic component may be incorporated as an ester, amide, or other functional group and later converted to the free carboxyl group by hydrolysis of the copolymer. The copolymer thus prepared is then mixed in aqueous dispersion with a pigment and other ingredients, if desired, to form a coating color. The coated paper formed from this is subsequently treated in an alum solution to render the coating insoluble, so as to provide a high wet-rub resistance.

As an example, 25.8 parts by weight of methyl methacrylate, 129 parts by weight of vinyl acetate, and 1.24 parts by weight of benzoyl peroxide were dissolved in 177 parts by volume of benzene and heated in a nitrogen atmosphere at 50°C. for 10 days. The resulting product was a solution containing a copolymer of methyl acrylate and vinyl acetate (about 96 per cent converted to the copolymer). To the thick benzene solution was added 1000 parts by volume of methanol and the benzene was then removed by distillation as the methanol-benzene azeotrope. The total volume of the solution was then brought to 1500 parts by the addition of further methanol, and the solution was heated to reflux temperature. Fifty parts by volume of concentrated hydrochloric acid were added, and the mixture was held at reflux temperature for 18 hours during which time a powderlike precipitate separated. The powder was filtered, washed with hot methanol, and dried in *vacuo* at 70° C. and 15 mm. pressure for 16 hours.

Forty parts of this product was then dissolved in 587 parts of 0.29 N sodium hydroxide. The solution was heated to 90-95° C. for 18 hours, during which time the pH dropped to about 11. The pH was then adjusted to 10.2 by concentrated hydrochloric acid, to yield an aqueous solution of a coating adhesive consisting of a hydrolyzed methyl acrylate-vinyl acetate copolymer.

Other examples and test data are presented in the patent specification.

Pulp Treating Apparatus

In U.S. 2,653,520, issued Sept. 29, 1953, to Karl Arvid Karlsson, an apparatus is described for treating a mixture of paper pulp or waste paper and water to prepare a suspension of proper consistency for economic treating in a pulping engine.

One form of the apparatus is shown in Figs. 1 and 2, the former being a vertical section and the latter a horizontal section. The apparatus includes a cylindrical tank 1 open at its top. Mounted eccentrically in the tank is a vertical shaft 2 supported at the bottom with a bushing 3 and a bottom plate 4, and at the top with a bearing 6 supported on a beam 5. The upper end of the shaft may carry a belt pulley, 7, as shown.

A blade wheel 17 carried by the shaft 2 is used for agitation; it includes a number of blades 10 and an annular disc 11 supported by the upper edge of the blades. The disc 11 has a central opening 12, and supports two curved baffles 13 by means of

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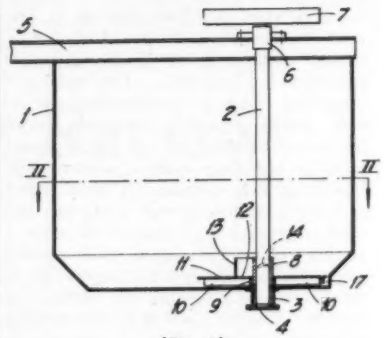
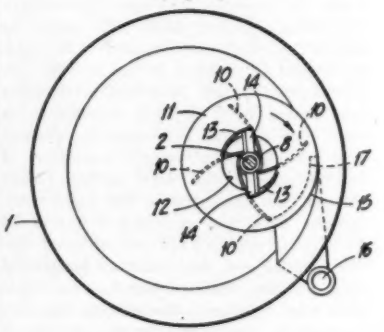


(Fig. 1)



(Fig. 2)

the radial arms 14. The arms may be obliquely placed, as shown in Fig. 1, so as to act as propeller blades for improving the movement of the liquid in the direction of shaft 2. At the level of the blades, an outlet opening 15 is provided in the wall of the tank, leading to a discharge conduit 16.

The blade wheel is started rotating with the tank full of water. Pulp or waste paper is then added. The blade wheel, acting as a centrifugal pump, draws the water and solids towards the opening 12, and then discharges them at a high velocity toward the wall of the tank, causing the tank contents to circulate. Pieces of the pulp or waste paper are torn by this action. Larger pieces are prevented from reaching the opening 12 by means of the baffles 13 and the arms 14, until they gradually become small enough to enter the opening 12. The blade wheel also continuously pumps the finished slurry through the discharge opening 16; additional water and pulp or waste paper are also added continuously. A grid or screen 17 prevents large pieces of pulp or paper from entering the conduit.

Adding Neoprene to Paper

In U.S. 2,657,991, issued Nov. 3, 1953, to Robert H. Walsh and William W. Pockman, and assigned to E.I. du Pont de Nemours & Co., a method of incorporating neoprene in paper pulp is disclosed. This results in improved tensile strength, elongation, fold resistance, and tear strength.

In general, the method involves adjusting the difference between the electrical charge on the pulp fibers and that on the neoprene latex particles before mixing to less than 50 millivolts, then mixing the two dispersions, adding a coagulant, and forming paper. The preferred method of accomplishing this is by reducing the strongly negative charge on the latex particle by the addition of salts and dispersing agents.

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Pulp evaluation; a comparative study with various laboratory beaters

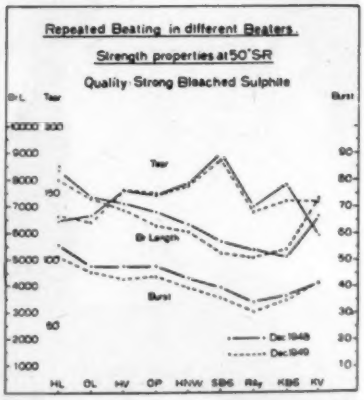
By making an extensive study of the beating of a variety of pulps in different participating laboratories, the author arrives at the conclusions summarized below.

The pulps used include a number of sulfite and kraft samples, an aspen pulp and a pulp used for rayon. Each of these is hydrated in two different Lampen mills (HL and OL), a PFI-Mölle (OP), an Aylesford beater (R-Ay), a Banning-Seybold beater (SB-S), a Noble and Wood beater (HN-W) and a Valley beater (HV). Despite the wide variations in the results, due in part to differences in sheet making, *all* the beaters grade most of the pulps in the same order with respect to breaking length, tensile strength, and opacity. This is true for the various kraft pulps and for most of the sulfite pulps, but fails in certain instances in the case of an aspen and a rayon pulp.

Tear resistance can not always be clearly interpreted. With the exception of two kraft pulps, all the beaters grade the pulps in the same order with respect to folding endurance. There is no clear uniformity in the case of "apparent specific gravity" of the pulps, nor can the various beaters be used to grade the pulps with respect to beating time to reach 50° Schopper-Riegler. With breaking length as a criterion, reproducibility (after several months of storage) in each type of beater is very good; it is fairly consistent in the case of tear, but less satisfactory for bursting strength.

Curves indicating repeated beating (in the case of a strong bleached sulfite pulp) are shown in the accompanying figure. (In these graphs added to the beaters listed above are the Banning-Seybold beater (K-35) and a Valley beater (KV), both in a mill in Korsnäs).

In comparing the effects of the various beaters, the lowest tensile, burst and strength figures are obtained in the Aylesford beater and in the Banning-Seybold beater (SB-S). The highest values are obtained with the two Lampen mills, in the case of strong unbleached and bleached



sulfites; but for soft pulps, the highest figures are found by beating in a PFI mill (OP). In some cases, variations in the methods of calculation make comparison difficult. At 50° Schopper-Riegler, KV and OP beaters give similar and consistent results for tensile, burst, tear, fold and apparent specific gravity values. There is also a fair agreement between values obtained by use of the R-Ay and the SB-S beaters in the case of tensile, burst, folding endurance, and opacity values. The opacities of the pulps are reduced most in the Lampen mills and least in the Aylesford and Banning-Seybold equipment.

A direct comparison between two different beaters of the same type and manufacture (*e.g.*, HL and OL) is not too satisfactory. In the case of Banning-Seybold beaters tested out in two different mills (K-BS and SB-S) some of the differences are due to variations in sheet-making.

The present study does not attempt to compare the effects of laboratory beaters with those of the mill beaters. The paper includes 24 figures, 20 tables, and twelve references. It is evidently a cooperative study. Torsten Ekstam. *Paper and Timber* (*Finland*), 35, Nos. 11 and 12, 475-494 (1953) (in English).

Degradation studies with cotton and wood pulp

The experiments are carried out with the same cotton cellulose and bleached sulfite pulp used in previous experiments [cf. Hartler and Samuelson. THE PAPER INDUSTRY, 34, No. 12, 1498 and 1500 (1953)].

The present comprehensive work deals with the effects on cotton cellulose and bleached sulfite pulp of an alkaline solution at 170°C. for varying time periods, as well as the degradation caused by ozone. These results are compared with those obtained in acid hydrolyses (carried out with 2.5*N* H_2SO_4 at 80°C). The authors discuss quite fully the rate of dissolution (*i.e.*,

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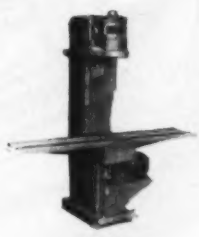

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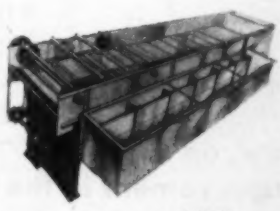

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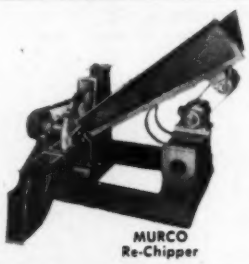

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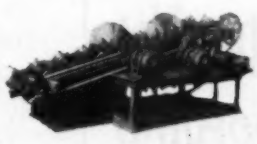

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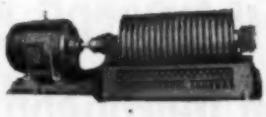

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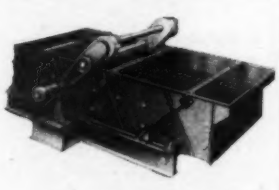

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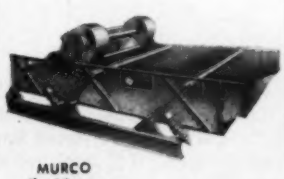

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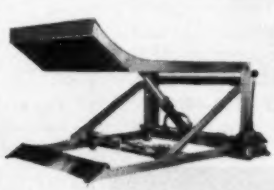

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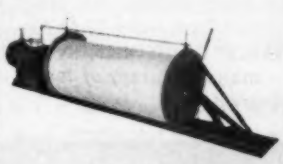

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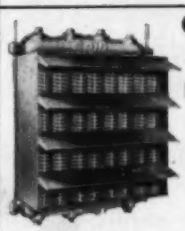

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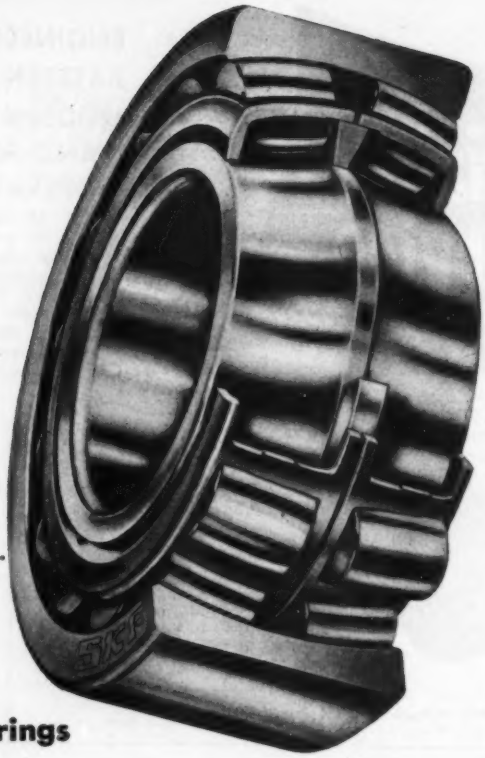

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yield versus time), the rate of degradation (viscosity versus time), the formation of cold and hot alkali-soluble matter, and of carboxyl groups.

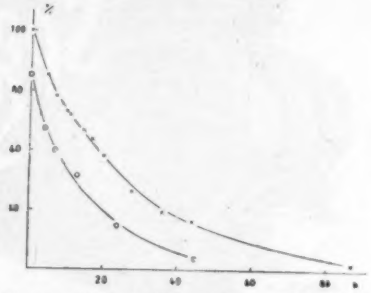

Fig. 1—Alkali cooking at 170° C. Yield of hot alkali-resistant cellulose versus time. X cotton; O wood pulp

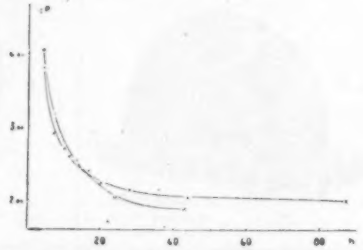

Fig. 2—Alkali cooking at 170° C. Viscosity versus time. X cotton; O wood pulp

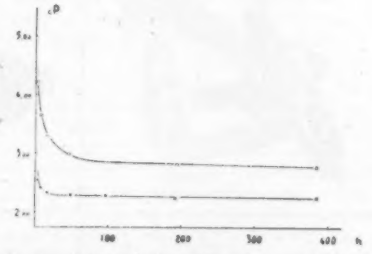

Fig. 3—Acid hydrolysis. Viscosity versus time. X cotton; O wood pulp

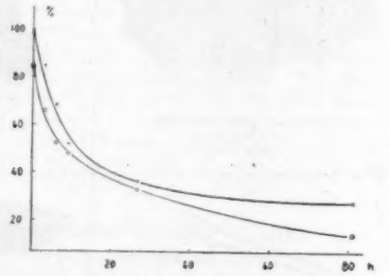

Fig. 4—Ozone treatment. Yield of hot alkali-resistant cellulose versus time. X cotton; O wood pulp

The results of acid hydrolyses are shown in detail in the accompanying tables. The alkaline degradation (using 500 ml. of a 5 per cent NaOH solution per 25 g. cotton cellulose or bleached sulfite pulp) is far greater for bleached sulfite pulp than for cotton cellulose. This is shown in Fig. 1, in the case of hot alkali-resistant cellulose. Viscosity differences, as indicated in Fig. 2, are less marked. In the case of the acid

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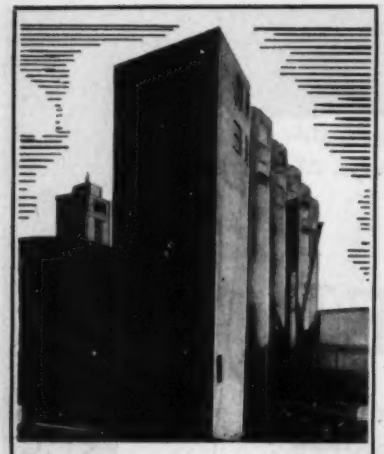

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hydrolyses, degraded bleached sulfite pulp (in the period ranging from 4 to 384 hours) actually shows a higher viscosity than does degraded cotton cellulose. This is indicated in Fig. 3. The results of ozonization (which is not too well controlled) shows only slight differences in the effects on viscosity. However, the yield of hot alkali-resistant cellulose after ozonization is lower in bleached sulfite pulp than in cotton cellulose (Fig. 4).

Table 1. Degradation of cotton by acid hydrolysis.

Time of reaction hours	Yield %	Cold alkali solubility %	Yield of cold alkali resistant cellulose %	Hot alkali solubility %	Yield of hot alkali resistant cellulose %	Viscosity cP
0	—	0.20	1.00	—	—	2,200
4	98.80	1.70	97.10	10.50	86.30	830
8	97.85	3.05	94.80	17.50	67.30	540
16	96.60	3.90	92.70	23.20	69.50	330
48	94.80	5.50	89.30	33.00	56.30	240
96	94.00	8.25	85.80	37.50	56.50	130
192	93.50	8.80	84.70	39.40	54.10	110
384	93.00	10.50	82.50	50.80	42.20	105

Table 2. Degradation of wood pulp by acid hydrolysis.

Time of reaction hours	Yield %	Cold alkali solubility %	Yield of cold alkali resistant cellulose %	Hot alkali solubility %	Yield of hot alkali resistant cellulose %	Viscosity cP
0	—	10.00	—	30.00	—	870
4	97.00	12.40	84.60	37.50	59.50	400
8	95.80	13.50	82.30	39.80	55.90	300
16	95.50	15.00	80.50	40.60	54.90	220
48	97.20	15.90	81.30	39.80	56.80	160
96	—	16.00	—	39.20	—	140
192	93.80	16.50	77.30	42.00	49.10	130
384	89.60	17.50	72.10	34.00	39.90	170

It is shown definitely that ozone leads to the formation of carboxyl groups in the cellulose which increase in amount as the time proceeds. Carbonyl groups are also formed. O. Samuelson, G. Grangard, K. Jönsson, and K. Schramm. *Svensk Papperstidn.*, 56, 779-784 (1953) (in English).

Means of disinfecting and conserving books attacked by molds

The consequences of attack on cellulose by such organisms as *Trichothecium roseum* and *Penicillium glaucum* are outlined and the physical and chemical means of disinfection now at the disposal of libraries are discussed.

The suggested techniques involve: (a) fumigation with hydrogen cyanide; (b) long treatment with hot air at 130°C; (c) treatment with moist air at 95°C; (d) wet treatment of infected areas with permanganate and sodium sulfite, and (e) wet treatment with a mixture of 3 per cent lysol and 5 per cent mercuric chloride (or 10 per cent phenol).

None of these are satisfactory because the labor and/or materials costs are too high, or else the techniques are unwieldy and impractical. In most cases, there is no assurance against subsequent mold attack. New developments are needed urgently. Hellmuth Helwig. *Das Papier*, 7, 235-239 (1953). (In German.)

Rapid oxidation of sulfite spent liquors in certain analyses

Using hydrogen peroxide, the author expedites the oxidation of spent liquors in which nitrogen and potassium are to be determined. The liquor, (1) is treated with 10 cc. of 30 per cent hydrogen peroxide for every gram of total solids in 1. This cold solution is then added *dropwise* to a boiling mixture of 10 cc. sulfuric acid, 3 g. potassium sulfate and 0.3 g. mercuric sulfate in a 250 cc. Kjeldahl flask, when *nitrogen* is to be determined. The oxidation requires about one hour and can be hastened by adding one to two drops of 60 per cent $HClO_4$ towards the close of the reaction. No excess of this last named reagent can be used. Subsequently, nitrogen is determined by the usual Kjeldahl technique.

By a modification of the method, after removal of most of the calcium ions in 1 potassium in the liquor can also be determined. The decalcified solution is filtered, treated with hydrogen peroxide and added very slowly to 3-5 cc. boiling sulfuric acid. Here, too, $HClO_4$ aids in the reaction. The colorless solution is then rinsed into a platinum (or porcelain) dish, evaporated to dryness and heated at low red heat to expel ammonium salts, cooled, treated with 10 per cent hydrochloric acid, evaporated, dissolved in 15-20 cc. water and filtered.

Potassium is determined in the filtrate by the Kohler procedure as $K.B(C_6H_5)_4$. [*Z. anal. Chem.* 138, 9, (1953)]. Provided the potassium is to be determined by the older $KClO_4$ technique, the above final aqueous solution is not filtered, but cooled to prevent explosions; sulfates are removed as $BaSO_4$ and the $KClO_4$ is precipitated by adding 60 per cent $HClO_4$ and alcohol. However, this $KClO_4$ is impure and must be recrystallized. The author gives full details of the analytical procedures. Fritz Neumann. *Das Papier*, 7, 388-91 (1953) (in German).

Rapid determination of variations in dry content of pulp bales

A portable fan drier is developed (cf. accompanying figure) which is capable of drying air-dry pulp in 1.5-2 minutes at 165°C. and wet pulp in 10-15 minutes. The corresponding drying times at 140° C. are 3 and 25 minutes, respectively. Although the occurrence of excessive or imperfect drying cannot always be avoided, the possible errors are quite small and are of no importance in the detection of variations of several per cent. The apparatus is superior to earlier electrical equipment used.

Often the rapid testing of samples taken from 12 bales is adequate, five wedge-shaped samples being taken from each of these bales. Bone dry weights and standard deviation are calculated. A table indicates whether or not more bales should then be sampled. Statistically, it is shown that this number of samples depends on the size of the shipment and on the variability. So far, the techniques have been applied, in practice, to air-dried pulps, but the method (with further developments) should also lend itself to sampling bales of wet pulp.

The statistical treatment is described fully, and specific examples are given. Eight references. P. Alander and B. C. Fogelberg. *Paperi ja Puu* (Finland), 35, No. 10, 371-378 (1953). (In English.)

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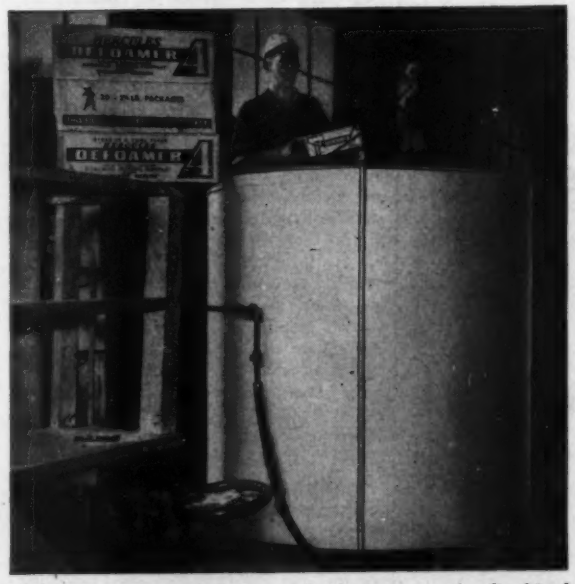

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Factors influencing the finish of an MG paper

Using their experimental paper machine, the authors study some of the factors influencing the finish of an "MG" paper (sheet finished on one surface). The following are varied: (a) dryness of the paper web before reaching the cylinder, (b) roll pressure against the cylinder, (c) the number of press rolls (one or two), (d) temperature of the cylinder, and (e) degree of beating of the stock. To ensure an unchanging surface, thin steel sheets are inserted between the paper and the cylinder face, in the first press roll nip.

Analysis of variance applied to the results shows statistically the effects of all the factors mentioned above, (except that of the cylinder temperature). The best finish resulted from the lowest dry content of the sheet, the highest roll pressure at the first pressure roll, together with beating to about 20° Schopper-Riegler. This is shown graphically. Data are given both for sulfate and sulfite stock. Eight figures and nine tables. O. Brauns and V. Peterson. *Svensk Papperstidning*, 56, No. 19, 727-733 (1953). (Original in Swedish, with an English summary.)

Heating and the moisture content of wallboard

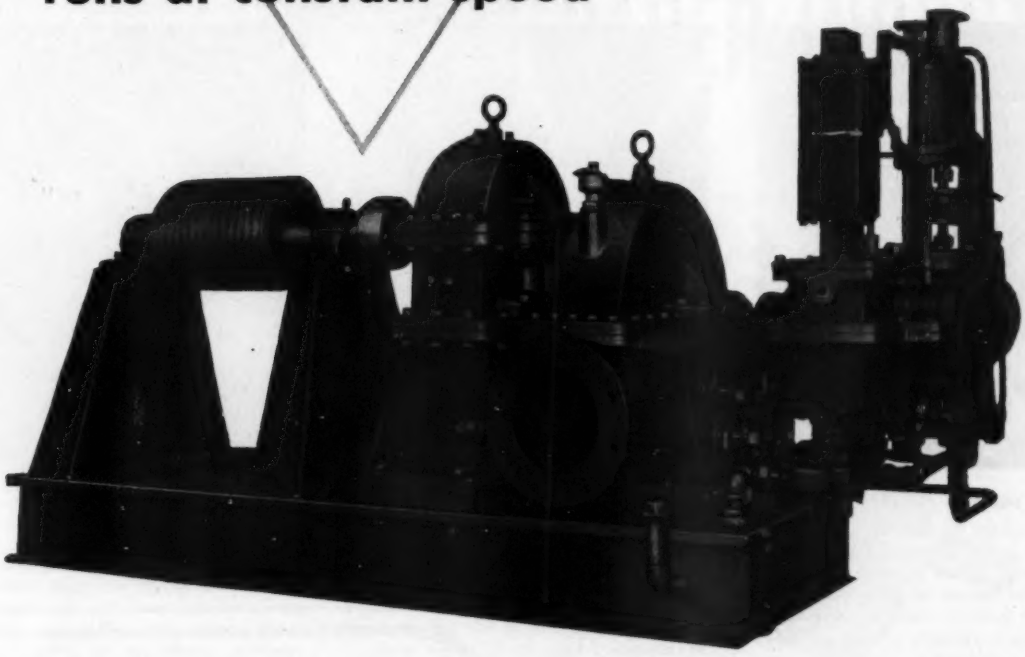
The author suggests the term "stability" in characterizing wallboards and includes in this the moisture absorption, swelling, strength, and (in the case of insulating boards) the tendency towards spontaneous ignition during storage or transport. Water absorption, strength and swelling can be influenced by the addition of suitable chemicals, but in producing a board of high quality, a "tempering process" must be introduced into the final stage of board manufacture.

Experience has shown that a relatively high temperature gives the best results, but this leads to operating difficulties inasmuch as this optimum temperature lies near the ignition temperature of the board. The author describes (and illustrates) a cooling table designed to bring down the temperature of the board as it leaves the tempering zone of the drier and before the product is stored.

In the case of hardboard, emphasis is placed on the importance of a high velocity in the circulating gas of the tempering chamber, as well as of a free gas passage all along the surface of the board. A new type of tempering chamber in which the board is placed horizontally is described, and the advantages of this arrangement are discussed. The design also includes an alarm system that warns of any abnormal rise in temperature and automatic fire extinguishing equipment.

In the tempering of hardboards, a humidifying stage is also required; the time of such humidification can be greatly reduced when the temperature is increased to about 90°C. Sketches are given of these newly designed pieces of equipment, including the humidifying chamber. Bror E. Löfgren. *Norsk Skogindustri*, 7, No. 12, 444-51 (1953) (in Swedish, with brief English summary).

to hold oil temperature constant while this Worthington Steam Turbine Drive runs at constant speed



A ROSS EXCHANGER

Furnished to provide constant-speed operation for paper machines, this Worthington single stage steam-turbine drive has been designed to hold, within 1/10 of 1%, the speed at which the governor is set — regardless of load changes.

To hold oil temperature constant . . . to safeguard bearings and other close clearance parts . . . the Worthington Corporation factory-installed a Ross Exchanger. Continuous re-cooling of lube oil is thus assured!

Regularly selected for their high thermal efficiency and proved ruggedness, Ross Exchangers are utilized throughout the paper and pulp industry: on calenders, super calenders, paper making machines, paper machine dryers, hardboard presses, pulpwood grinders, rewinders, turbine drives, engines and compressors — for cooling lube oil, jacket water and hydraulic fluid.

Completely pre-engineered and fully standardized, Ross Exchangers are promptly available in a wide range of sizes to meet a wide range of requirements.

Bulletins 1.1K5 and 2.1K1 give detailed information. Write.

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The Paper Industry New Products

Syphon scoop

In an attempt to remedy unsatisfactory conditions in the drainage of a revolving dryer, a new syphon scoop has been designed. This syphon scoop is a composite of the two principal methods of drainage, utilizing the advantages of each and eliminating the disadvantages. The scoop is constructed of 16 gauge stainless steel and is fastened to the inner shell of the dryer by cap screws.

The syphon pipe enters the rear portion of the scoop and is connected by a gland-packed union. This construction is said to make installation easier and does away with the need for extreme accuracy in cutting the length of the syphon pipe. There is little chance for wear, and maintenance is kept at a minimum, as the syphon scoop is fastened securely to the dryer shell.

In pictures 1 and 3, the action is that of a scoop passing through a pool of water, scooping the water and carrying it up until it can be removed through the syphon pipe. In picture 4, the speed of the scoop and the water is the same, and the removal of the water is accomplished by the action of the syphon.

The construction of the syphon scoop gives the advantages of a syphon under certain conditions and the advantages of a scoop under others. Also, this method of removing condensate or water from the dryer, it is claimed, is the only method which gives complete drainage at all speeds from very slow to the maximum fpm. *Armstrong Machine Works, Three Rivers, Mich.*

Greaseproof paper coating for food packaging

A new, economical, greaseproof coating for food packaging is now available to the paper industry. The material is "Elvanol" polyvinyl alcohol, used for years for industrial paper coating and sizing. Tests have shown that no polyvinyl alcohol is absorbed from the wrappings by greasy foods, according to the manufacturer. *E. I. duPont de Nemours & Co., Inc., Wilmington 98, Del.*

Continuous two-arm winder

A Model 20 continuous two-arm winder is now on the market. This new rotatable winder can be applied to winding rolls of any suitable web material on shafts, on expanding mandrels or directly on cores. Flying core starts can be made at speeds up to 300 fpm depending upon the material being wound. After the start has been made, winding can continue at any speed suitable to the process.

The winder is available in two model variations. The Model 20F requires a standard fixed length shaft on which cores are to be chucked, or for shaftless operation fixed length cores which can be engaged directly by spindle noses since the distance between the rotating arms is fixed. The Model 20V is adjustable to shafts or cores of different lengths. This is accomplished by moving the rotating arms in or out on the main shaft to the desired roll width.

The spindle noses rotate in ball bearings, and on the drive side are connected by means of air-operated clutches to the winding power source. On the opposite side a hand screw lock-up is provided for locking the shafts or cores. Rotation of the arms is electrically operated through a gearmotor.

The Model 20 is available in six sizes to handle roll lengths in 6 in. increments between 36 in. to 66 in. face and roll diameters up to 32 in. *Dilts Machine Works Div., Black-Clawson Co., Fulton, N. Y.*

Fitting for plastic tubing

Plastic tubing joined to "Swagelok" tube fittings by means of a new "Swagelok" insert is proving highly successful for many applications, according to the manufacturer.

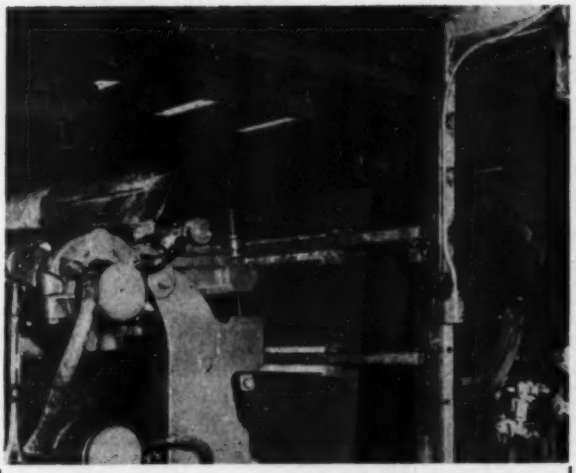
Resistance to chemical action and oxidation, non-contaminability, visibility and flexibility of "Tygon" plastic tubing when used in conjunction with leakproof fittings and inserts make the combination particularly desirable for laboratory, among many other applications.

The inserts, now available in any metal, protect the tube fittings against cold flow in the plastic and support the inside dimension of the plastic tubing while the torque-free tubing grips and seals the outside dimension. *Crawford Fitting Co., 884 East 140th St., Cleveland 10, Ohio.*

"Non-slip" handwheel for valves

A recently developed "non-slip" handwheel is designed so that valves can be closed completely with normal pressure, even though the operator's hands may be wet or greasy due to service conditions. This is an important feature since the slightest leakage can cause a serious erosion condition, impair the efficiency and shorten valve life.

It is claimed that 100 per cent closing pressure can be applied with the new handwheel, whether hands are dry, wet, or greasy, whereas the best that can be pro-



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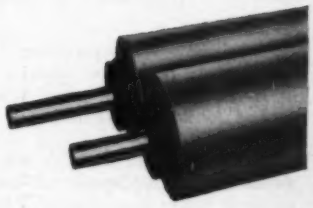

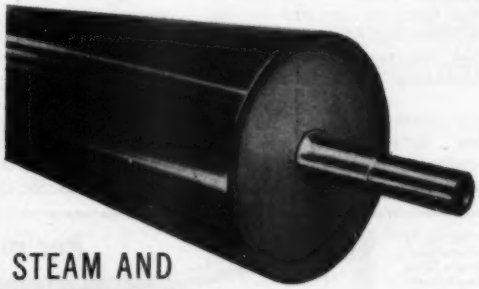

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duced with conventional handwheels is 40 to 50 per cent. Furthermore, the latter pressure cannot be maintained on repeated operations.

The handwheel features four finger-spaced lugs, all continuations of the spoke structure, projecting from the stem hub through a strong octagonal frame. This design is said to provide a firm, natural, comfortable grip and practically eliminates the possibility of burned hands from contact with a hot valve stem.

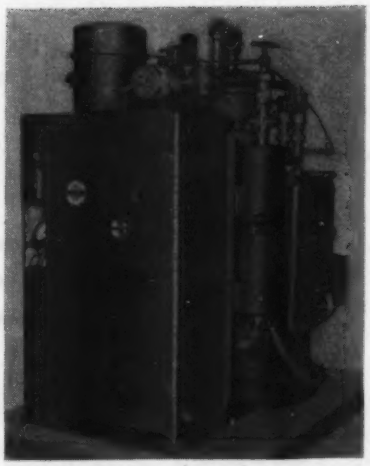
"Non-slip" handwheels are now standard equipment on Lunkenheimer's complete line of valves, which formerly were equipped with conventional malleable iron handwheels. *Lunkenheimer Co., Cincinnati, Ohio.*

V-belt

An improved "super-power" V-belt which has a horsepower capacity average of 40 per cent over standard V-belts, according to the manufacturers, is now on the market.

It is also claimed that this belt, known as the R/M super-power V-belt, lasts relatively longer than standard V-belts. On new drives, narrower sheaves may be used because fewer belts are required for the same power demands, thus saving space. The new belt has practically no stretch, virtually eliminating belt matching problems.

The belt's construction is of all synthetic rubber. It is oilproof, non-spark and heat-resistant. *Raybestos-Manhattan, Inc., Manhattan Rubber Div., Passaic, N. J.*



Steam generator

A new Vapor-Clarkson steam generator, Model OKJ-4740, that can change from fuel oil to natural gas fuel by flipping one switch and without interrupting steam output, has recently been developed.

The fuel oil spray nozzle has been incorporated into the metal body of the gas burner. When the fuel selection switch is flipped from natural gas to oil, the motorized gas valve closes and the fuel-oil solenoid valve opens, releasing oil under pressure to the spray nozzle. Fuel oil is always ready to be released to the combustion chamber because it is continuously circulated through the steam generator's hydraulic modulating controls. A constant spark and pilot light are claimed to insure positive lighting.

According to the manufacturer, this new steam generator develops full working steam pressure up to 300 lb. in less than three minutes from cold water, and makes 1,500 to 5,000 lb. of steam per hr. *Vapor Heating Corp., Dept. PR, 80 E. Jackson Blvd., Chicago 4, Ill.*

Spray gun

A new lightweight, inexpensive spray gun is now on the market. Designated as model 26, this new spray gun is made of aluminum and weighs only 15 oz. Its handle and trigger are designed to fit even a small hand.

It uses nozzle set-ups similar to those on heavy-duty production guns. The gun has a replaceable cartridge-type air valve and features a brass fluid passage which protects the body from the corrosion and erosion caused by many paints and other fluids. *Binks Mfg. Co., 3122 Carroll Ave., Chicago 12, Ill.*

Package water conditioner

The completely integrated package water conditioning plant may be used to remove turbidity, color and organic matter from water supplies; chlorinate; remove bad tastes and odors; remove iron and manganese; neutralize; soften, and de-alkalize.

The plant, as a complete package, forms a versatile and self-contained unit which is available in eight standard sizes ranging from 500 to 3,300 gal. per hour and

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flows of 12,000 to 79,200 gal. per 24 hours. Larger capacities can be furnished on request.

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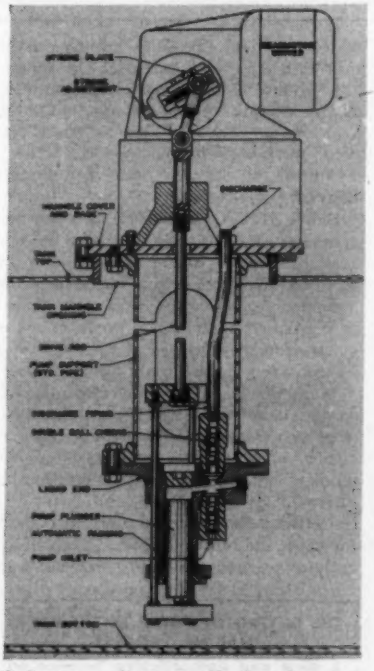
Carton coating material

A new type of Resyn "precoating" material of special interest to all specialty carton fabricators has been announced.

Resyn 80N782, as the new product is named, is said to seal and smooth the surface of "rough" and gray chip board, to produce at a low cost a superior printing surface on board comparable to clay coated stock. According to the manufacturer, the improved printing surface obtained with the use of this coating makes possible a glossier, more attractive job with better printing definition while using less ink.

The adhesive can be applied in a thin film (approximately 2 lb. wet per 1,000 sq. ft.) and dries to a moisture resistant coating that does not smudge readily under damp conditions.

Of additional interest to the specialty carton fabricator is that the coating operation can be integrated with the printing operation on a web feed so that no extra handling is required. *National Adhesives Div., National Starch Products Inc., 270 Madison Ave., New York 16, N. Y.*



Submerged controlled volume pump

The "Mersemetric," a new controlled volume pump, has no diaphragm or open seal. This pump is completely submerged in the liquid being pumped; therefore, there is no external leakage under any conditions. The unit, a flow control instrument, is available in a wide variety of materials of construction. Capacities range from 3 ml. per hour to 400 gal. per hour; pressures up to 1000 lb. psi. *Milton Roy Co., Station K, 1300 E. Mermaid Lane, Philadelphia 18, Pa.*

Sodium carboxymethyl cellulose

A new grade of sodium carboxymethyl cellulose, designated as Beater Additive 7WD, increases tensile and fold strength and makes a more uniform sheet of paper, according to the manufacturer. Only a fraction of a per cent of 7WD need be added, and practically all of it is incorporated in the paper.

Mill trials with 7WD have been made on both cylinder and fourdrinier machines and on paper stock varying from waste paper and straw to highly refined krafts and sulfites. *E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.*

Plastic industrial piping

Flexible, low-cost pipe made of Bakelite polyethylene plastic is said to reduce installation costs and overcome many operational problems in the chemical and allied industries, in addition to many other industries.

This pipe is tough and durable, yet very light in weight. It has outstanding electrical properties, extreme chemical inertness, corrosion resistance, rot and rust resistance, and smoothly extruded surfaces, according to the manufacturer. Extruded in continuous lengths up to 400 ft., depending upon pipe diameter, and supplied

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DRY

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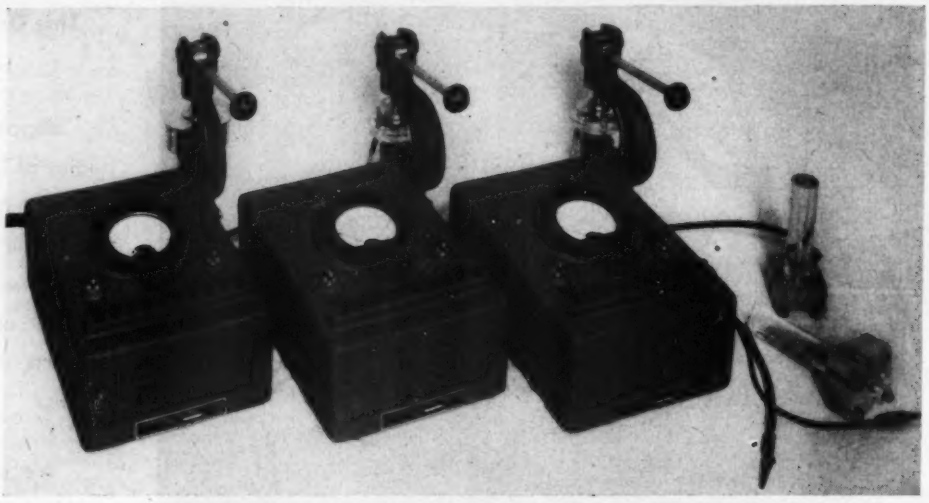

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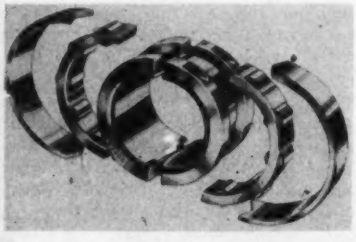
in standard pipe diameters from ¼ to 6 in., this pipe minimizes the number of fittings required. Necessary connections are made rapidly without the use of special tools, it is claimed.

Lightweight rigid pipe, also made of Bakelite polyethylene, is furnished in diameters up to 8 in. and shipped in 20 ft. lengths. *Carlon Products Corp., 10225 Meech Ave., Cleveland 5, Ohio.*



Split roller bearings

The components of the split roller bearings are split right down to the shaft, and the bearings can be applied where it is impossible to mount conventional type solid ball or roller bearings. The split feature does not limit the application of the bearings, according to the manufacturer. The split design permits an anti-friction roller bearing to be assembled around the shaft.

Fixed type (sometimes called groove-race bearings) are used as shaft locating and radial-thrust bearings. Expansion type (sometimes called floating-type bearings) are used to accommodate end play and shaft expansion. Bearings are housed in split cartridges with self-aligning, spherically ground O.D., which are mounted in machined split pillow blocks. *Cooper Split Roller Bearing Corp.,* 700 *Cedar Blvd., Pittsburgh* 28, *Pa.*

Biuret

Biuret, $H_2NCONHCONH_2$, is a new experimental product now available in test quantities. It is similar to urea and can be used in applications where urea or melamine are now used. It is not intended as a replacement for these products but is a new material which will supplement them in uses where its properties prove valuable.

Much of the interest expressed to date on the industrial uses of biuret has centered on its resin forming properties. A number of patents have described resinous products obtained by reacting biuret with various agents. These products are claimed to be useful as treating agents for paper and other materials.

Biuret is believed to be relatively non-toxic, nonexplosive and nonflammable; but it is a new and relatively untried material commercially, and its hazards have not been fully explored. It is being made available for research purposes only. *Product Development Dept., Nitrogen Div., Allied Chemical & Dye Corp.,* 40 *Rector St., New York 6, N. Y.*

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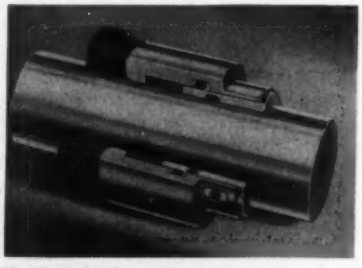
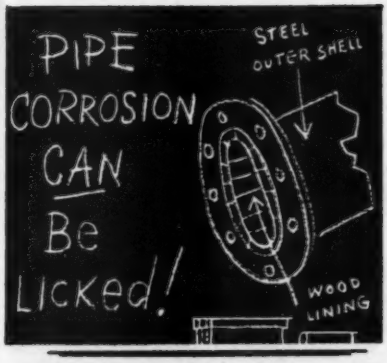


Mechanical seals for rotating pump shafts

Simplicity of design is an important feature of the new "O" ring mechanical seals for rotating pump shafts. The small number of parts affords easy manufacturing adaptibility of this improved seal to withstand any liquid, whether mild, harmfully corrosive or extremely hazardous, on rotating pump shafts.

These seals are designed to provide leakless operation of rotary shafts on centrifugal pumps handling chemicals, petroleum products, edible liquids, pulp liquors, and many other liquids. They are furnished in Type O, an unbalanced seal for pressures up to 200 psi, and in Type OB



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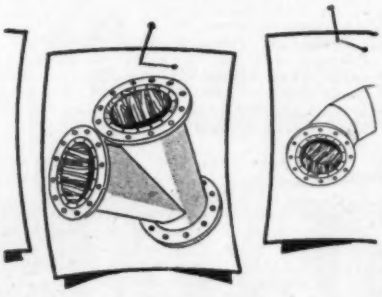

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(illustrated), a balanced seal for pressures up to and over 1,000 psi. Both types can be supplied with single spring or multiple spring, and in either pin-drive or sleeve-drive construction. *Garlock Packing Co., Palmyra, N. Y.*

Magnetic water clarification system

An entirely new type of patented system has been developed for the clarification of waste water from all types of paper and board mills.

This new system, which uses magnetic clarifiers, cuts down the long hours of settling time now required by present detention tank methods to 3 to 10 seconds. According to the manufacturer, tests made with a pilot model show that this water clarification system will clarify water over 1,000 times faster than any other known existing system.

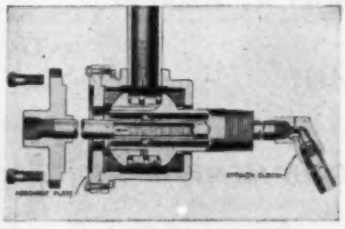
The entire installation is considerably smaller, about one-sixth of the size of those presently in use. *Black-Clawson Co., Hamilton, Ohio.*

Anthraquinone dyestuff

Ahcovat Brown 4-R double paste, homogeneous anthraquinone dyestuff recently added to Arnold, Hoffman's vat line, has several unique qualities not previously found collectively in any other comparable vat dyestuff for dyeing and printing. Among these, the chlorine fastness of the dyestuff in rich, red-brown shades is outstanding.

The product is said to hold its hue when shade depth is increased or decreased and it fades "on tone." Constant shade under artificial light is another feature of the new dyestuff. Light and wash fastness are excellent, according to the manufacturer.

This dyestuff is recommended for use as a self-shade for production of red-browns and as a shading color, or as a basis for a combination of shades. *Arnold, Hoffman & Co., Inc., Providence, R. I.*



Syphon elbow and assembly plate

Two new developments, which were recently announced, are said to reduce maintenance time in the insertion and removal of mechanical syphon pipes in rotating rolls or drums that require the insertion of steam or other liquids and the removal of condensate.

The recently redesigned Type J rotary pressure joint is available with a special assembly plate, as illustrated, which serves to hold the internal parts of the joint in position when the head is removed. The syphon pipe can thus be removed without disturbing the joint proper or the steam inlet connection. All Type J joints, one inch and larger, are designed so that assembly plates can be added at any time.

The second new development is a hinged syphon elbow. Two straight pipes may be threaded to this elbow, eliminating the need for a curved pipe serving as a mechanical syphon pipe. As the first pipe is inserted in the roll or drum, its weight closes the elbow, which enables the stainless steel seat to create a closed line that is both leakproof and pressureproof. *Johnson Corp., Three Rivers, Mich.*

Solvent-handling hose

A new solvent-handling hose with high resistance to methyl ethyl ketone, acetone, methyl acetate and other alcohols and esters of petroleum has recently been announced. This hose utilizes a Thiokol tube and a heavy-duty tank car-type construction, making it serviceable for suction applications as well as simple discharge.

The hose is available in single 50 ft. lengths in three diameters: 2, 2½, and 3 in. *Hewitt-Robins Inc., Stamford, Conn.*

Diaphragm operated control valve

The new Type D-53 diaphragm operated control valve is made in two basic types: normally open and normally closed. It may be used to handle water, air, oil, or any non-corrosive fluids.

This all bronze valve, with renewable chrome-plated valve seat of full port diameter and renewable composition seat disc, has a neoprene-nylon diaphragm. Full port diameter means full capacity and low pressure drop through the valve. For maximum hook-up flexibility, diaphragm pressure connection may be indexed to any of four positions: over inlet, over outlet, or either side.

Among its many applications, this valve is used as a cooling water control valve, air operated, on paper roll brakes. It is available in either ½ or ¾ in. pipe size. Maximum body pressure is 250 psig and diaphragm pressure is 300 psig. *A. W. Cash Valve Mfg. Corp., 666 E. Wabash Ave., Decatur, Ill.*

New Products Briefs . . . .

LABORATORY DISHWASHER—A new laboratory dishwasher, called the "Labwasher," is designed primarily for use in laboratories. The glassware remains stationary in the racks while an impeller swirls the water upward at an angle. It washes and dries glassware containing either oil or water soluble material and will accommodate almost all types of flasks up to two or three-liter size, as well as beakers, funnels, cylinders, graduates, and many other shapes and forms. *Chemical Rubber Co., Cleveland, Ohio and Electric Appliance Div., Westinghouse Electric Corp., Mansfield, Ohio.*

HYDRAULIC PUSHER ATTACHMENT—A new hydraulic pusher attachment makes possible the unloading of many kinds of loads by pusher action, thereby eliminating manual handling. It is particularly suitable for work in railroad box cars and highway

trucks. With this attachment, loads can be carried directly on the forks—either standard or chisel type depending upon the load. *Yale Materials Handling Div., Yale & Towne Mfg. Co., Philadelphia, Pa.*

ALUMINUM PAINT—A new and improved one-coat Thermalite high-heat aluminum paint for exterior use is designed for use on metal surfaces with temperatures ranging from 400 to 1000°. Formulated with a heavy silicone content, Thermalite "fuses" to the surface, will not discolor, blister, flake or burn off, and gives protection against severe weather and chemical fumes, according to the manufacturer. *Tropical Paint & Oil Co., Cleveland 2, Ohio.*

REDUCING VALVES—New small flow bronze or steel reducing valves for steam, air, gas or liquid service have been added to the Leslie line of reducing valves. Compact and rugged, the reducing valves handle inlet presures to 1,000 psi and reduced pressures from 2 to 400 psi. *Leslie Co., 203 Delafield Ave., Lyndhurst, N.J.*

SHATTER-PROOF SIGHT GLASSES—Oil sight glasses that remain transparent indefinitely and survive severe corrosion, extreme temperatures, shock and vibration are now being molded from "Kel-F" plastic, a fluorocarbon material, by Nichols Engineering, Inc., Stratford, Conn. Oils, sludges and acid products are said to have no effect on the new glasses. *Technical Service, Chemical Mfg. Div., M. W. Kellogg Co., P. O. Box 469, Jersey City 3, N. J.*

CONVEYOR BELT COVER—A new conveyor belt cover has been developed which, according to the manufacturer, promises resistance to abrasion and tearing never before attained. Known as the "XDC" conveyor belt cover, the manufacturer claims that it provides the truest balance-of-wear between strength members (the fabric or cord plies) and cover yet devised, besides giving superior flex life and added resiliency. *Raybestos-Manhattan, Inc., Manhattan Rubber Div., Passaic, N. J.*

ROSIN SIZE—A new grade of paste-fortified rosin size for the paper industry, known as Pexol 240, is made from dark rosin and is said to provide a highly efficient size at low cost. According to the manufacturer, reductions up to 50 per cent in the amount of size furnish have been reported by mills who have changed to this rosin size. *Hercules Powder Co., Wilmington, Del.*

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APPA Affiliates Elect Officers

AFFILIATED GROUPS AND divisional associations held extensive meetings during the four days of the national APPA convention in New York, N. Y. Yearly elections of officers were announced and reports on the activities of the past year presented. Many of the organizations also staged discussion sessions on their particular problems of manufacture and distribution, while headline speakers from industry and government alike were heard.

Principal officers (some reelected) chosen to serve during 1954-55 are as follows:

Writing Paper Manufacturers Association—President: Hale Holden of Byron Weston Co.; vice president: J. H. Goodwin of International Paper Co.; vice president: Nelson Bridgham of Strathmore Paper Co.; executive secretary-treasurer: M. C. Dobrow; assistant secretary: John F. Darrow, and assistant treasurer: Miss Olive F. McGill.

Newsprint Service Bureau—President: G. E. Young of Crown Zellerbach Corp., and vice president: A. G. Wakeman of Coosa River Newsprint Co.

Paper Napkin Association—Chairman: R. L. Fentsamaker of C. A. Reed Co., and vice chairmen: L. W. Moore of Crown Zellerbach and James E. Asmuth of Wisconsin Tissue Mills.

Tissue Association—President: W. J. Servotte of Bay West Paper Co.; vice president: Wayne A. Brown of Crown Zellerbach; treasurer: Clayton White of Pequannock Valley Paper Co., and executive secretary: Ross A. Fife.

National Council for Stream Improvement—Chairman: George E. Dyke of Robert Gair Co. Inc.; vice chairmen: Clyde B. Morgan of Rayonier Inc. and W. Irving Osborne Jr. of Cornell Paperboard Products Co.; treasurer: J D. Zink of Hammermill Paper Co., and executive secretary: Russell L. Winget.

Soda Pulp Manufacturers Association—Chairman: E. H. Clapp of Penobscot Chemical Fibre Co.; vice chairman: Amor Hollingsworth, also of Penobscot, and secretary-treasurer: George A. Vogel of Mead Sales Co.

Sulphite Paper Manufacturers Association—Chairman: W. A. Brown of Crown Zellerbach, and vice chairman: Neil E. Nash of Nekoosa-Edwards Paper Co.

Groundwood Paper Manufacturers Association—President: Samuel Pruyn of Finch, Pruyn & Co.; eastern vice president: John Cryan of Fraser Papers Ltd., and western vice president: Robyn Campbell of Minnesota & Ontario Paper Co.

Blotting Paper Manufacturers Association—President: Graham A. Carlton of Standard Paper Mfg. Co.; vice president: W. W. Langtry of the Mead Corp., and secretary: Eric G. Langerloef.

Specialty Paper and Board Affiliates—President: A. P. Mitchell of Riegel Paper Corp.; vice president: Malcolm B. Lowe of Lowe Paper Co., and secretary-treasurer: G. D. Cook.

Coated and Processed Paper Association—President: Lawrence R. Clark of Hampden Glazed Paper & Card Co.; new executive committee members: Louis C. Krauthoff of H. D. Cavity Corp. and Leonard Schulman of Kupfer Bros. Co., and secretary-treasurer: Arthur A. Thomas.

Waxed Paper Institute—Chairman of the executive committee: D. A. Snyder of Marathon Corp., and managing director: John M. Tindall.

United States Pulp Producers Association—Regional directors: Downing P. Brown of Brown Co., P. H. Glatfelter of P. H. Glatfelter Co., F. H. Savage of International Paper Co., Lyall Stilp of Kimberly-Clark Corp., and L. K. Larson of Weyerhaeuser Timber Co.

Waterproof Paper Manufacturers Association—President: Leif B. Norstrand of Specialty Converters Inc., and vice president and administrative officer: David E. Ryan of Edgewater Paper Co.

Glassine and Greaseproof Manufacturers Association—Chairman: Olaf Hedstrom of Hartford City Paper Co.

Kraft Paper Association—President: Walter C. Shorter of Camp Mfg. Co., and vice president: H. S. Daniels of Union Bag & Paper Corp.

Association of Pulp Consumers—President: Carlton W. Smith of Moraine Paper Co.; vice president: Layne Taylor of W. C. Hamilton & Sons Inc., and secretary-treasurer: Reed R. Porter.

Pulp and Paper Machinery Association—President: Charles S. Barton of Rice Barton Corp.; treasurer: A. L. Bolton Jr. of John W. Bolton & Sons Inc., and secretary: John Cornell.

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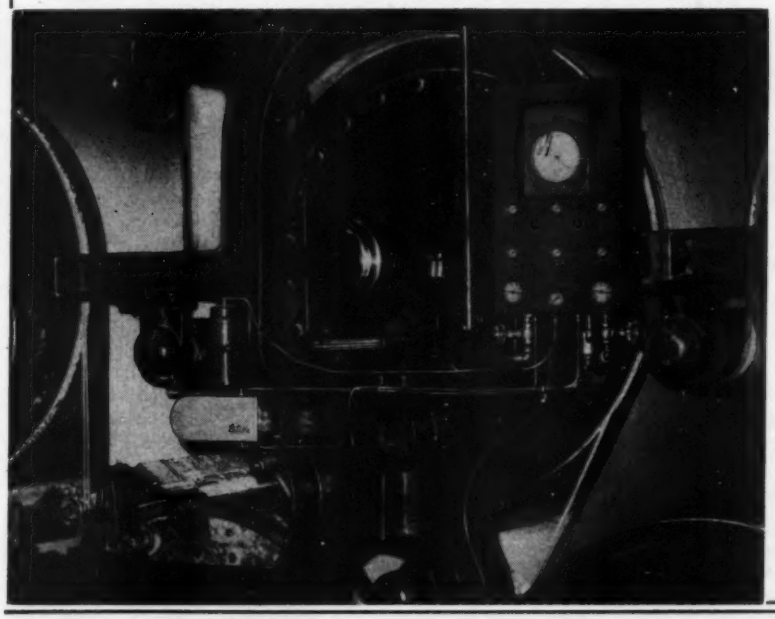

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The Paper Industry New Literature

Books

LOCKWOOD'S DIRECTORY OF THE PAPER AND ALLIED TRADES. 1954 Edition. Published by Lockwood Trade Journal Co., Inc., 15 West 47th St., New York 36, N.Y. Regular edition and pocket-size traveler's edition. $10.00.

This 79th annual edition contains the following information: comprehensive reports of the paper and pulp mills in the United States and Canada; mill officials; reports of the paper and pulp mills in Latin America and Philippine Islands; list of idle mills in the United States and Canada; list of new mills in the United States and Canada; an alphabetical list of products made by all of the paper and pulp mills in the United States and Canada; names and street addresses of pulp and paper mills and mill agents maintaining offices in the principal cities of the United States and Canada.

Also included in this directory are sections on paper, pulp mill and converters equipment and supplies; converters; converters' products; general paper merchants; paper exporters and importers in New York City; rags and paper stock consumed in the United States and Canada; pulp testers; trade associations in the paper and allied trades of the United States and Canada; watermarks and brands used in the American paper trade, with names and addresses of owners, and wood pulp agents. Also included is a statistical table showing the number of concerns owning mills, together with the number of paper and pulp mills in the United States and Canada.

THE BUILDER (a novel). By Norbert and Bessie Bergquist. Published by Pageant Press, 130 West 42nd St., New York 36, N.Y. 5½ x 8¼. 225 pages. $3.00.

This novel is the story of a man with a dream of establishing newer and finer paper mills and how he made it come true. The growth of the paper industry in this country is portrayed through the experiences of the central character. All characters and situations are fictitious, but the background is authentic.

The story begins in the year 1892 as young Bob Ware begins his first job in a strawboard mill in Mount Clare, Vermont, pitching straw in the cooker and carrying pulp for a dollar a day. After the death of his wife, Mary, just a short time after their marriage, Bob moves from job to job, shunning paper mills and everything else that reminds him of the past.

Finally he decides to go back to the paper industry and obtains a job forking rags into a big vat in a four-machine mill in another town. The book goes on to relate the story of his rapid rise in the paper industry.

In the early 1930's Bob and Kay, his second wife, decide to retire and move to Florida. They have not been living in Florida very long when he answers a plea to look over a failing mill in Minnesota and decides to stay and run the mill. The book tells of the problems encountered in rehabilitating mill.

The climactic ending shows how Bob's dream is finally fulfilled.

The co-author, Mr. Bergquist, is employed by Southland Paper Mills in Lufkin, Texas.

CONVERTING COST MANUAL. Published by National Flexible Packaging Association, 850 Euclid Ave., Cleveland 14, Ohio. $2.00. (Ink Scanning Charts, 40 cents.)

This cost manual is designed specifically for the conditions encountered by converters of specialty paper, transparent films and foils. It includes all the essential factors in a simplified but practical cost system. Predetermination of ink costs is explained fully, and a plastic ink scanning chart is available to measure printed areas on a package or art work.

RESOURCES AND THE AMERICAN DREAM. By Samuel H. Ordway, Jr. Published by Ronald Press Co., 15 East 26th St., New York 10, N.Y. $2.00.

This is a study by a man deeply concerned with the dangers inherent in the present heedless use of America's resources. The book gives the author's personal reaction to what is perhaps the basic conservation problem and suggests the changes our way of life must undergo if we are to meet with success a foreseeable lack of raw materials. The program recommended here is based on a fundamental reorientation of our way of life.

SAFETY MANUAL FOR THE GRAPHIC ARTS INDUSTRY. Published by National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill., and Education Council of the Graphic Arts Industry. $2.50.

This manual contains detailed information for printing plant management use in protecting personnel from accidents and injuries, as well as protecting equipment and facilities. It is written in such a manner that it is equally useful in the small and large plant.

Chapters are devoted to the composing room, plate-making, pressroom, and bindery. In each of these chapters examples are cited of successful injury preventive measures found in various printing plants. There are over 70 illustrations, many of them sufficiently detailed so that management can readily copy and install these safety measures in their own plants.

In addition to the chapters dealing with the various sections of a printing plant, there are also chapters on "Handling Materials," "Safety—Everybody's Gain," "Machines, Equipment and Services," "Fire Safety," and "Putting Safety to Work."

Booklets and Pamphlets

ENGELMANN SPRUCE FOR PULP AND PAPER PRODUCTS (Report No. R1944-2). By E. R. Schafer. Published by U.S. Forest Products Laboratory, Madison 5, Wis. 7¾ x 10¼. 6 pages. This report summarizes the work that has been conducted at the Forest Products Laboratory since 1941 on the suitability of Engelmann spruce *(Picea engelmanni)* for pulp and paper manufacture. The properties of Engelmann spruce are discussed, and some of the properties and the chemical analysis of several samples of this wood received for pulping tests are given in an accompanying table. A discussion of the pulping of Engelmann spruce is given, together with a table showing the yield of pulp that can be expected from Engelmann spruce by the various processes. A paragraph on newsprint paper made from Engelmann spruce is included, and a third table shows a comparison of the properties of a typical experimental newsprint paper made from this wood and average values for commercial newsprint.

INSULATING BOARD AND HARDBOARD FROM FOUR COMMON HARDWOODS OF NORTHEASTERN FARM WOODLOTS (Report No. D1931). By Sidney L. Schwartz. Published by U.S. Forest Products Laboratory, Madison 5, Wis. 7¾ x 10¼. 23 pages. This report presents experimental data obtained by the Forest Products Laboratory on the production of insulating board and hardboard from soft maple, beech, white birch, and hard maple. The following topics are discussed: materials used in the experiments, equipment and procedure for the preparation of boards, board testing procedure, results, and conclusions. References are given. Seven tables and three photographs are included.

MANUFACTURE AND PROPERTIES OF PAPER MADE FROM CERAMIC FIBERS (PB 111075). Published by Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C. 8 pages. 25 cents. One of a series of reports on the Naval Research Laboratory's research program to develop new insulations made of a glass or ceramic-fiber paper base impregnated with resins, which stand up under much higher temperatures than conventional insulating materials made of a resin-impregnated organic material base (paper or cloth) describes the work done in developing a paper from a new synthetic ceramic fiber or rock wool.

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The report also describes how the fine fibers needed for making the paper were separated from the coarse ones with which they were mixed.

GROUNDWOOD PULPING OF PONDEROSA PINE THINNINGS (Report No. R1947). By E. R. Schafer and Axel Hyttinen. Published by U.S. Forest Products Laboratory, Madison 5, Wis. 7¾ x 10¼. 6 pages. Groundwood pulping experiments using ponderosa pine thinnings and papermaking experiments using ponderosa pine groundwood pulps are described, and the conclusions are listed. A description of the wood is presented. Two tables list the data on the experiments.

LOGGING METHODS AND COSTS IN THE SOUTHERN APPALACHIANS. (Station Paper No. 30). By R. A. Campbell. Published by Southeastern Forest Experiment Station, Asheville, N. C. Is pine cheaper to log than hardwoods of the same size? What effect, if any, does the size of the average tree have on total logging costs? If I own a team should I hire a tractor to do my logging or vice versa? How much does a logging tractor cost to operate per hour? These cost factors and related ones regarding mountain logging are discussed in this report.

HANDBOOK OF SHEAR KNIVES AND SLITTER KNIVES. Published by American Shear Knife Co., Homestead, Pa. 72 pages. Among the subjects covered in this pocket size handbook are grades of shear knives, recommended applications, shear knife tolerances, slitter knife tolerances, regrinding service, and other useful information. Suggestions are given for the proper care of knives, proper grinding procedures, and knife-setting recommendations. Numerous photographs and drawings show the knives in a wide variety of applications and operations.

PROCEEDINGS OF NATIONAL FARM WOODLOT CONFERENCE. Published by American Forest Products Industries, Inc., 1816 N St., N.W., Washington 6, D. C. 8½ x 10½. 101 pages. Up-to-the-minute reports on farm forestry progress around the country are discussed in this booklet of the proceedings of the National Farm Woodlot Conference, held June 25-26, 1953.

ACCURATE PAPER CUTTING. Published by Henry Lindenmeyr & Sons, Div. of Hubbs Corp., 480 Canal St., New York 13, N. Y. 5½ x 7½. 21 pages. This booklet discusses the care of cutting knives and cutting machines. It goes on to give some facts about the bevel of a knife. Some "causes and cures" of "everyday cutting room troubles" are given. Proper methods for cutting 34 different kinds of paper, bristol, and board are presented in convenient chart form.

1954 DIRECTORY OF OCCUPATIONAL SAFETY POSTERS. Published by National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. 8¼ x 11¼. 72 pages. Designed for use in various industries and the occupations related thereto, 744 miniature posters are included in this directory. Information is given on how to obtain posters, how to use posters most effectively, and how to plan poster selections. Other poster program aids, such as electros, frames and payroll enclosures, are discussed.

FIFTEEN YEARS OF MANAGEMENT ON THE CROSSETT FARM FORESTRY FORTIES (Occasional Paper 130). By R. R. Reynolds. Published by Southern Forest Experiment Station, 704 Lowich Bldg., New Orleans 13, La. This paper gives a detailed account of two demonstration farm forests that have been managed since 1937 on the Crossett Experimental Forest in southern Arkansas. One of the 40-acre areas originally had a depleted stand of pine and an abundance of low-quality hardwoods, while the second tract was well stocked at the beginning of the experiment. The author describes the two forties when forest management began, the system under which they are harvested, the control of the low-quality hardwoods, the amount and value of timber cut, and the labor and other costs of harvesting and management.

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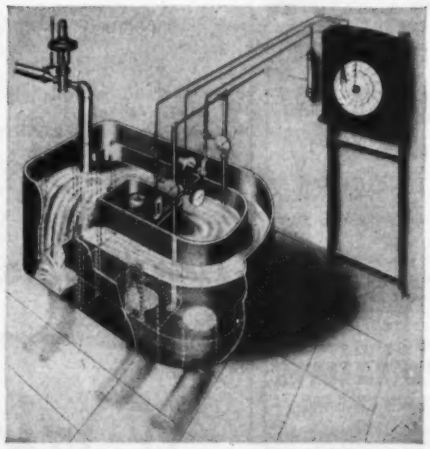

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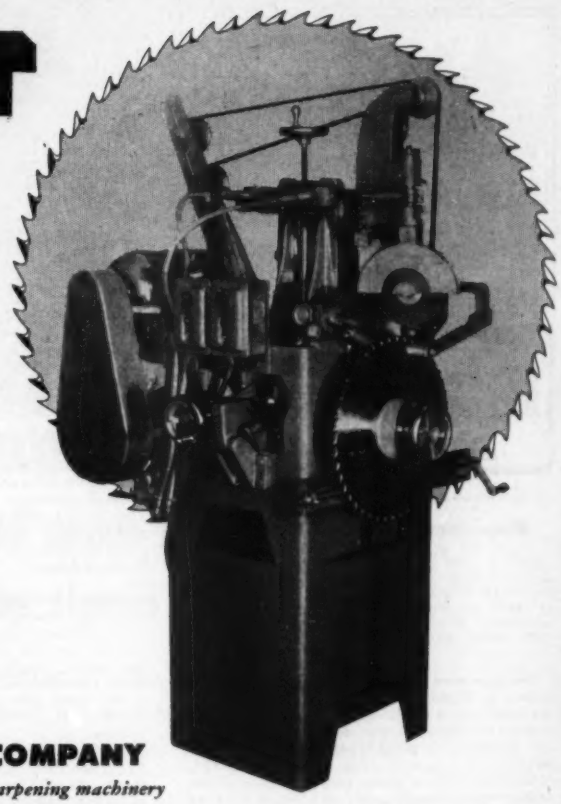

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Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY *lists the following catalogues, bulletins and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.*

Temperature & Conductivity Controllers. Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa.—Complete data about moderate-priced electronic instruments for two-position or proportional control is now available in a new 20-page catalogue (ND47), which shows how three types of Electromax temperature controllers are being used to regulate temperatures up to 1000° F. It also describes an Electromax conductivity controller that is being used to check condensate purity. One section combines simple diagrams and descriptions to show how the Electromax temperature controllers apply two-position control or proportional control. Another section presents the "packaged" Electromax systems used for all three types of temperature control, and for two-position control of conductivity. The catalogue includes pictures of typical Electromax installations. All specifications are listed in easy-to-read tables.

Centrifugal Pumps. Allis-Chalmers Mfg. Co., 991 S. 70th St., Milwaukee, Wis.—Single-stage, double-suction centrifugal pumps (Type S) are described in a newly revised bulletin (08B6146B), containing 28 pages. In addition to providing data on the pumps' construction features, the bulletin explains how to figure pumping head, carries tables of available sizes, approximate dimensions and head capacities, and tabulates friction loss for water per 100 feet of pipe.

Air Circuit Breakers. General Electric Co., Schenectady 5, N.Y.—12-page Bulletin GEA-5915 describes low-voltage air circuit breakers of five different types. One section of the bulletin presents installation photographs. The stored-energy spring-operated closing mechanism is fully explained, as is the principle of interruption. Dimensions are given for each type.

Rubber Covered Rolls. Tyer Rubber Co., Industrial Roll Div., Andover, Mass.—This 4-page bulletin describes the wide variety of rubber covered rolls that Tyer makes for the paper, leather, textile, plastics, packaging, abrasive and miscellaneous industries. It discusses the characteristics and advantages of various types of rubber compounds. Included is a densimeter-plastometer conversion chart and interesting photographs of Tyer precision manufacturing processes. A clear, easy-to-read diagram shows how to list specifications data for rubber rolls completely and accurately.

Industrial Heaters. Westinghouse Electric Corp., Sturtevant Div., Dept. T-025, 200 Readville St., Hyde Park, Boston 36, Mass.—32-page Catalogue 1510 on standard and heavy-duty centrifugal fan industrial heaters gives information on where to use the heaters, at what circulating capacities and temperatures, and how to place them. Another section explains automatic temperature control and tells how to estimate the heat load a particular heater must carry. A set of typical specifications is given and typical examples are worked out. Tables and graphs of performance data are also given, as well as outline dimensions of the units. Other sections cover construction features, accessories, and instructions for installation.

Aldehydes. Carbide & Carbon Chemicals Co., 30 East 42nd St., New York 17, N. Y.—This 36-page book (F-5278) discusses in detail the 14 aldehydes that are now sold in commercial quantities by the company. Information on other aldehydes that are available in research quantities is also included. Uses and suggested applications for the aldehydes, their physical properties, shipping data, specifications, test methods, constant-boiling mixtures, and a list of selected references to aldehydes in the technical literature are included.

Belt Conveyor Idlers. Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.—More than 500 belt conveyor idlers in 34 types, designed to meet practically every requirement, are pictured and described in a new 48-page booklet, No. 2416. Light, medium and heavy-duty 20-degree troughing idlers, two styles of 45-degree idlers, flat belt, belt training, rubber cushion and the new variable troughing idlers are included, all in a broad range of roll diameters and belt widths, together with return belt idlers and such accessories as idler stands, grease pipe extensions and a grease seal and bearing extractor. Detailed information is provided for selection and spacing, based on weight and lump size of material to be conveyed. Schematic drawings and dimensional data are included for each type of idler.

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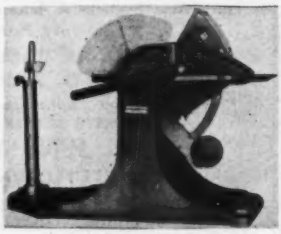

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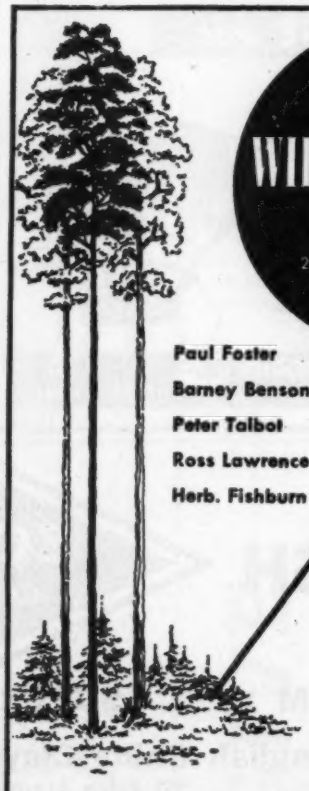

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Skilled engravers of applicator and embossing rolls for paper and coating industries.
Southeastern Cylinder Engraving Co.
311 EAST 12th St. Box 1816 CHARLOTTE, N. C.

WANTED:
LAMINATED BOARD SALESMAN
Long-established board mill located in southeast requires experienced man to market production from recently installed laminator. Should have thorough knowledge of kraft and chip laminated grades. This is an opportunity with a company having excellent reputation and sound personnel policies. Confidences strictly respected.
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CONFIDENTIAL EMPLOYMENT SERVICE
For paper mills, pulp mills and paper converting plants. Servicing employers seeking executives and executives seeking positions. *We welcome your inquiries.*
CHARLES P. RAYMOND SERVICE, Inc.
Phone LIberty 2-6547 — 294 Washington St., Boston 8, Mass.

WANTED—One turbine operator, by large paper company in Northern Maine. Experienced in all phases of operation of medium-sized Westinghouse bleeder type turbines in a plant of 20,000 kilowatts capacity.
Boiler room foreman, must be experienced in the operation of pulverized coal equipment. Medium pressure, water tube boilers. Steady work, retirement plan, other benefits.
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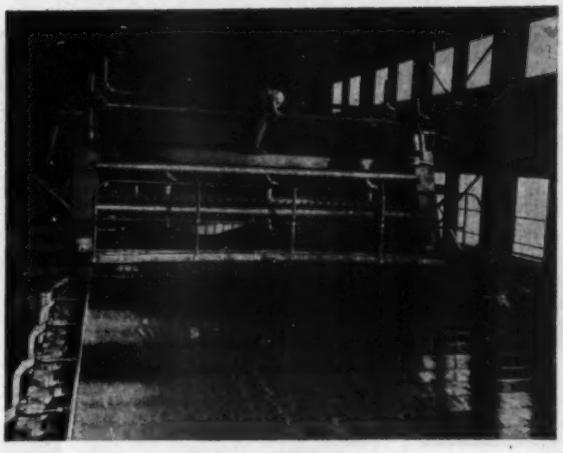
Must be 26 to 32 years of age, married and living in Chicago area. Sales experience in carload or tank-car quantities preferred. Will call on confectioners, food processors and the paper industry. Straight salary, expenses and car mileage allowance. Write giving experience, present income, education, etc. Replies will be held strictly confidential. Our employees know of this advertisement. Address: Box 568, The Paper Industry.



Mill improves cleaning of paper machine by simple change

Removal of slime, pitch and hydroxide from "wet-end" now done in 4 hours with Oakite solution—circulation method

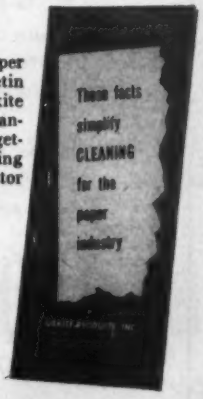
A combination of trisodium phosphate, anti-slime agent and cleaner had given poor results on the "wet end" of one mill's paper machine. Since the efficiency of the machine depended directly on its cleanliness, something had to be done. Oakite was asked about it.

Because stock and white water lines, as well as the bird screens, were vulnerable to alkalies, the Oakite Man recommended Oakite Compound No. 84A. He charged the pit with a solution of this acidic detergent, heated it to 160°F and started circulation from the save-all pit to the bird screens, head box, Fourdrinier, and back to the pit. Temperature was maintained by steam coil in pit. Only 4 hours later the job was done—and done right. The wire appeared bright as new—with all pitch and spots gone. The head box copper lining glistened. Back in production, the machine showed an immediate improvement in efficiency.

Proving that...in industrial cleaning it pays to call in Oakite.

* * *

You'll see many ways Oakite can help cut paper mill cleaning costs discussed in this bulletin No. 4647. Write for it. And remember, Oakite service and experience, as well as Oakite cleaning methods, make the difference between getting *cleaning results* and getting just cleaning *materials*. Write Oakite Products, Inc., 16 Rector Street, New York 6, N. Y.



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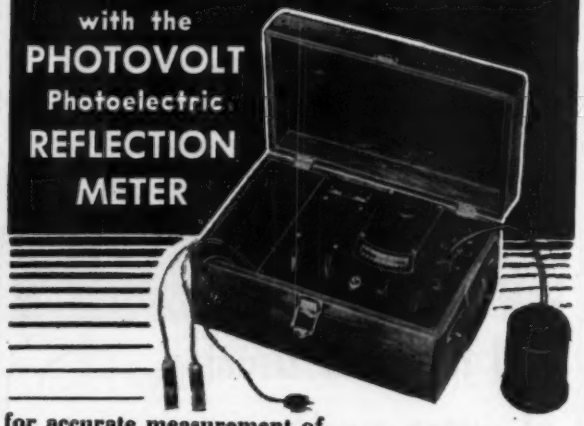

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Capacity 150 tons daily of Natural Kraft

Located on Lake Superior at
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There is always a supply of efficient reasonable labor on hand. This is the only industry in a town of 2,500 population.

The Mill has the following facilities:—
ONE 5 CYLINDER BOARD MACHINE CAPABLE OF PRODUCING 120 TONS OF BOARD FROM 12-PT. TO 45-PT. TRIM 116".

ONE PULP MACHINE CAPABLE OF DRYING 30 TONS AIR-DRY PULP IN 24 HOURS.

PULP MILL AND WOOD ROOM (Rebuilt Last 5 Years)

NEW BOILER AND HIGH PRESSURE COMBUSTION RECOVERY UNIT.

ADEQUATE WOOD SUPPLY

For particulars apply

C. G. McLaren
NATIONAL CONTAINER CORPORATION
Tomahawk, Wisconsin

MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

The following are quotations to mills, f.o.b. New York:

No. 1 White Shirt Cuttings	11.50 to 12.00
New Unbleached Muslins	13.50 to 14.00
Fancy Shirt Cuttings	6.75 to 7.00
No. 1 Percales	6.75 to 7.00
No. 1 Washables	3.00 to 3.25
No. 1 Light Silesias	7.00 to 7.25
No. 1 Light Prints	5.75 to 6.00
Light Flannelettes	7.25 to 7.50
Cottonades	3.75 to 4.00
Blue Overalls	6.75 to 7.00
Blue Cheviots	6.75 to 7.00
Canton Flannels, Bleached	10.75 to 11.25
Canton Flannels, Unbleached	10.75 to 11.25
Osnaburg Cuttings	7.75 to 8.00
Underwear Cuttings, Bleached	13.75 to 14.25
Underwear Cuttings, Unbleached	13.75 to 14.25
Khaki Cuttings—	
Sun Tan	7.00 to 7.25
Mixed	3.75 to 4.00
Linen Cuttings—	
American	7.25 to 7.50
White	13.00 to 14.00
Grey	13.00 to 14.00

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

Roding	per cwt.
No. 1	1.10 to 1.20
No. 2	.85 to .90
No. 3 and 4	.70 to .80
Twos and Blues—	
Repacked	2.25 to 2.50
Thirds and Blues—	
Repacked	2.00 to 2.25
Miscellaneous	1.65 to 1.85
Whites, No. 1—	
Repacked	4.50 to 4.75
Miscellaneous	4.00 to 4.25
White, No. 2—	
Repacked	3.50 to 3.75
Miscellaneous	3.00 to 3.25

RAGS (Foreign)

ex dock New York City

NEW RAGS

	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)

ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shopperies	

ROPE and BAGGING

f.o.b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	4.25 to 4.50
Domestic	4.50 to 4.75
Wool Tares—	
Light	4.75 to 5.00
Heavy	5.00 to 5.50
No. 1 Scrap Bagging	3.75 to 4.00
Manila Rope—	
No. 1 large	7.00 to 7.50
No. 1 small	6.00 to 6.50
Sisal Rope—	
No. 1 large	6.00 to 6.25
No. 1 small	5.50 to 5.75
New Burlap Cuttings	6.00 to 6.50
Jute Threads—	
Foreign (Nom.)	6.00 to 6.50
Domestic	6.25 to 6.75
Strings—	
No. 1 sisal	5.25 to 5.50
No. 2 sisal	4.75 to 5.00
Soft jute	5.25 to 5.50
Mixed	3.00 to 3.25

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

Shavings—	per ton
Hard White Env. Cuts	115.00 to 125.00
Hard White No. 1	90.00 to 95.00
Soft White, one-cut	75.00 to 80.00
Soft White, No. 1	55.00 to 60.00
Coated Soft	40.00 to 45.00
Fly Leaf No. 1	25.00 to 30.00
Fly Leaf, Woody No. 1	25.00 to 30.00
No. 2 Mixed Col. Woody	20.00 to 25.00
Flat Stock—	
No. 1 Heavy Books and Magazines, Repacked	22.00 to 24.00
Mixed Books	16.00 to 17.00
Ledger Stock—	
No. 1 White	55.00 to 60.00
No. 1 Mixed (Colored)	37.50 to 40.00
Manilas—	
New Env. Cuttings	65.00 to 70.00
New Cuts, One-Cut— Extra Manilas	17.00 to 18.00
Manila Tab Cards, Free of Ground Wood	70.00 to 75.00
Colored Tab Cards	45.00 to 50.00
Kraft—	
New Envelope Cuttings	65.00 to 70.00
Tripled Sorted No. 1 100%	42.50 to 45.00
No. 1 Old Assorted	27.50 to 32.50
News—	
White Blank	55.00 to 60.00
Overissue	25.00—
No. 1 Folded	18.00—
Old Corrugated Containers	18.00—
New Jute Corrugated Cuts	22.00—
Mill Wrappers	15.00—
Box Board Chips	12.00—
No. 1 Mixed Paper	11.00—

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—	
Lump, cwt.	4.55—
Ground, cwt.	3.85—
Powdered, cwt.	4.70—
Blanc Fixe—	
Pulp, bulk, ton	100.00—
Dry, barrels	105.00—
Bleaching Powder— Drums, cwt.	5.00 to 6.00
Casein (Domestic Standard) 20-30 mesh (bags), lb. 80-100 mesh (bags), lb.	28.00—
Argentine, lb.	21.50 to 22.00
China Clay—	
Domestic Filler Bulk (mine) ton	10.50 to 16.00
Domestic Coating Bulk (mine) ton	17.00 to 25.00
Imported (ship side) Bulk (lump) ton	20.00 to 30.00
Chlorine—	
Tank cars (wks) cwt.	2.93—
Gelatine (silicon), lb.	1.25 to 1.35
Glyc. (C.P.) drums, lb.	33½ to .34
Litharge, powd. bbl. lb.	.14½ to .15

MARKET QUOTATIONS

Rosin (Gum)— New York, per 100 lbs.

E	8.70—
F	8.70—
G	8.70—
WW	9.10—

Rosin (Wood), carlots, F.O.B. South..... 6.50—

Salt Cake—

Dom. bulk (wks) ton.	19.00 to 23.00
Imp. bulks on dock— (Atl. ports) ton (Nom.)	22.00—

Soda Ash—

Bulk (works) cwt...	1.45—
Paper bags, cwt.....	1.75—

Soda (Caustic)—

Solid drums, cwt....	3.70 to 4.45
Ground and flake, drums, cwt.....	4.10 to 4.85

Sodium Silicate—

60 deg. 55 gal. drums, (works) cwt.....	1.60 to 1.70
40 deg. 35 gal. drums, (works), cwt.....	1.35 to 1.40

Starch—

Pearl, 140 lb. bags, cwt.	6.39—
Pearl, barrels, cwt...	6.39—
Paper (Sp.) bags, cwt.	6.39—
Powdered, barrels, cwt.	6.60—

Sulphur (Crude) (Mine) bulk, long ton 26.50 to 28.00

Talc—

Dom. 100 lb. bags (mine) ton.....	25.00 to 28.00
Canadian	35.00 to 45.00

Titanium Dioxide—

Barium Pig, bbls., lb.	.22½ to .23
Calcium Pig, bbls., lb.	.22½ to .23

Zinc Sulphide, bbls., lb. 11.50 to 12.00

WOOD PULP

Quotations on domestic and Canadian wood pulp, dollars per short air dry ton, delivered consuming mills including basic freight allowances, follow:

Bleached Sulphite.....140.00—
Bleached Sulphite, Canadian .....140.00—
Unbleached Sulphite....120.00—
Unbleached Sulphite, Canadian .....120.00—
Bleached Soda.....140.00—
Bleached Soda, Canadian.140.00—
Kraft, Bleached.....145.00—
Kraft, Bleach., Southern.142.50 to 150.00
Kraft, Bleach., Canadian.145.00 to 150.00
Kraft, Unbleached, Northern .....132.50—
Kraft, Unbleached, Southern ..... 95.00 to 105.00
Kraft, Unbleached, Canadian .....100.00 to 125.00
Kraft, Semi-Bleached, Southern .....140.00—
Sulphite Screenings..... 72.50—
Sulphate Screenings..... 67.50—
Groundwood ..... 82.50 to 87.50

Quotations on imported wood pulp, dollars per short ton, on dock American Atlantic ports with varying freight allowances, follow:

Bleached Sulphite, Swedish ..... 140.00—
Bleached Sulphite, Norwegian, freight allowed.140.00—
Bleached Sulphite, Finnish, freight allowed.140.00—
Unbleached Sulphite, Swedish .....110.00 to 115.00
Unbleached Sulphite, Finnish, freight allowed.120.00 to 125.00
Kraft, Unbleached, Swedish, freight allowed..105.00 to 110.00
Kraft, Unbleached, Finnish, freight allowed.105.00 to 125.00
Kraft, Bleached, Swedish, on dock....142.50 to 145.00
Kraft, Bleached, Norwegian .....

PAPER

Boards—

Prices per ton, delivered, 10 tons or more:

Plain Chip.....	85.00—
News vat lined chip...	97.50—
Filled news.....	87.50—
Solid news.....	90.00—
White vat lined chip..	135.00—
Chip tube and can stock.	100.00—
Single manila lined chip.	140.00—
Single jute lined chip..	135.00—
Kraft liner.....	122.50—

White patent coated:

.020	160.00—
.018	162.50—
.016	165.00—

Book Paper—

Coated two sides

70 lb. No. 2 enamel, 25x 38-500, trimmed 4 sides.	4 cases $17.25 Carloads $16.30
45 lb. enamel, 25x38-500, trimmed 4 sides.....	4 cases $13.05 Carloads $12.10

Uncoated

55 lb. No. 2 offset, 25x38 500, trimmed 4 sides....	4 cases $14.80 Carloads $13.85
50 lb. A Grade English Finish, 25x38-500, untrimmed	4 cases $14.05 Carloads $13.10
20 lb. envelope, 17x22-500, untrimmed	Carloads $12.40
16 lb. tablet, 17x22-500	Carloads $11.35

Rag Content Bond—

Extra 100% rag....	70.45—
100% rag.....	62.65—
75% rag.....	48.15—
50% rag.....	38.90—
25% rag.....	31.75—

Rag Content Ledger—

Extra 100% rag....	72.65—
100% rag.....	63.90—
85% rag.....	52.50—
75% rag.....	49.40—
50% rag.....	40.20—
25% rag.....	33.00—

Sulphite Bond—

Air dry bond (Watermarked) ...	19.00—
No. 1 bond (M.F. watermarked)	15.00—
No. 2 bond (M.F. watermarked)	14.00—
Plain bond (M.F. unwatermarked) ...	14.00—

Sulphite Ledger—

No. 1, M.F. watermarked.....	20.50
No. 2, M.F. watermarked.....	19.50
Plain, M.F. unwatermarked.....	19.00

News—	per ton
Rolls, Standard (Contract)	125.00 to 126.00
Rolls (Spot).....	(Nominal)
Sheets	138.00—

Tissues (Carlots)—	per ream
White No. 1.....	1.75—
White No. 2.....	1.35—
Bleached Anti-Tarnish..	2.20—
Colored	2.00—
Anti-Tarnish Kraft...	1.65—
Manila	2.00—
Napkins, semi-crepe (12½ lb. to M shts.) per cs.....	.90—
Napkins, full crepe and embossed (12½ lb. to Mshts.) per cs.....	.90—
Toilet, Bleached (M shts.) per cs.....	9.35—
Toilet, Unbleached (M shts.) per cs.....	7.90—

Towels—	per case
Bleached	6.80—
Unbleached	5.90—

Wrappings (Kraft)—	per cwt.
Standard wrapping	8.00—
Butchers, counter rolls..	8.50—
Standard bag, mill rolls.	7.75—
Shipping sack, mill rolls.	8.00—
Gumming, mill rolls....	8.25—
Asphalting, mill rolls...	8.00—
Envelope, mill rolls.....	9.50—

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A glance will confirm the proper condensate flow or warn you of an inadequate flow. Nor need you fear that the "window" will cloud over and obstruct the view. It cannot cloud over.

All parts well made, non-corrosive and good for years. All standard pipe sizes for pressures up to 125#.

Price remarkably low even for a few for test. Give pipe size when ordering.

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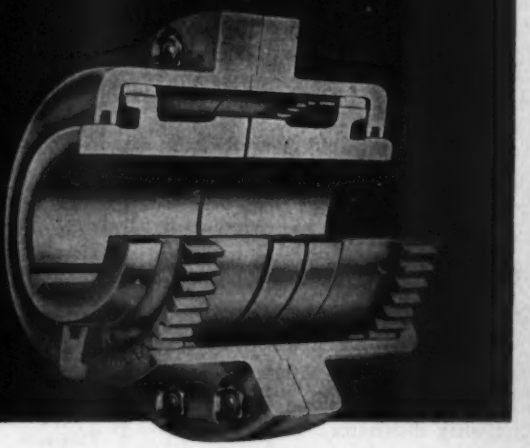

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The National Safety Council maintains a stock of posters that covers all industries, operations and phases of safety and health. These posters are produced in three sizes: "A" size, 8½" x 11½"; "B" size, 17x23"; and "C" size, 25x38". Their colorful illustrations and eye-catching captions make them ideal for the mass selling of safety.

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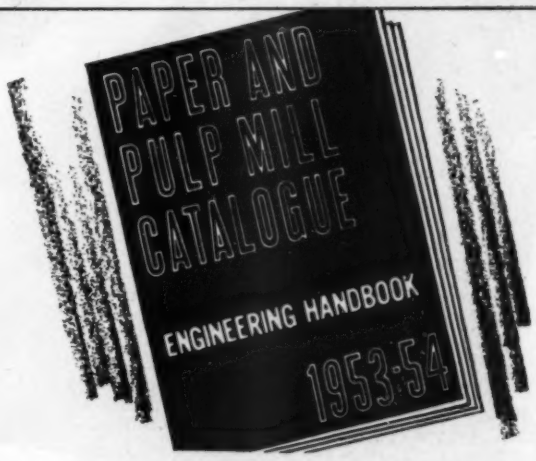

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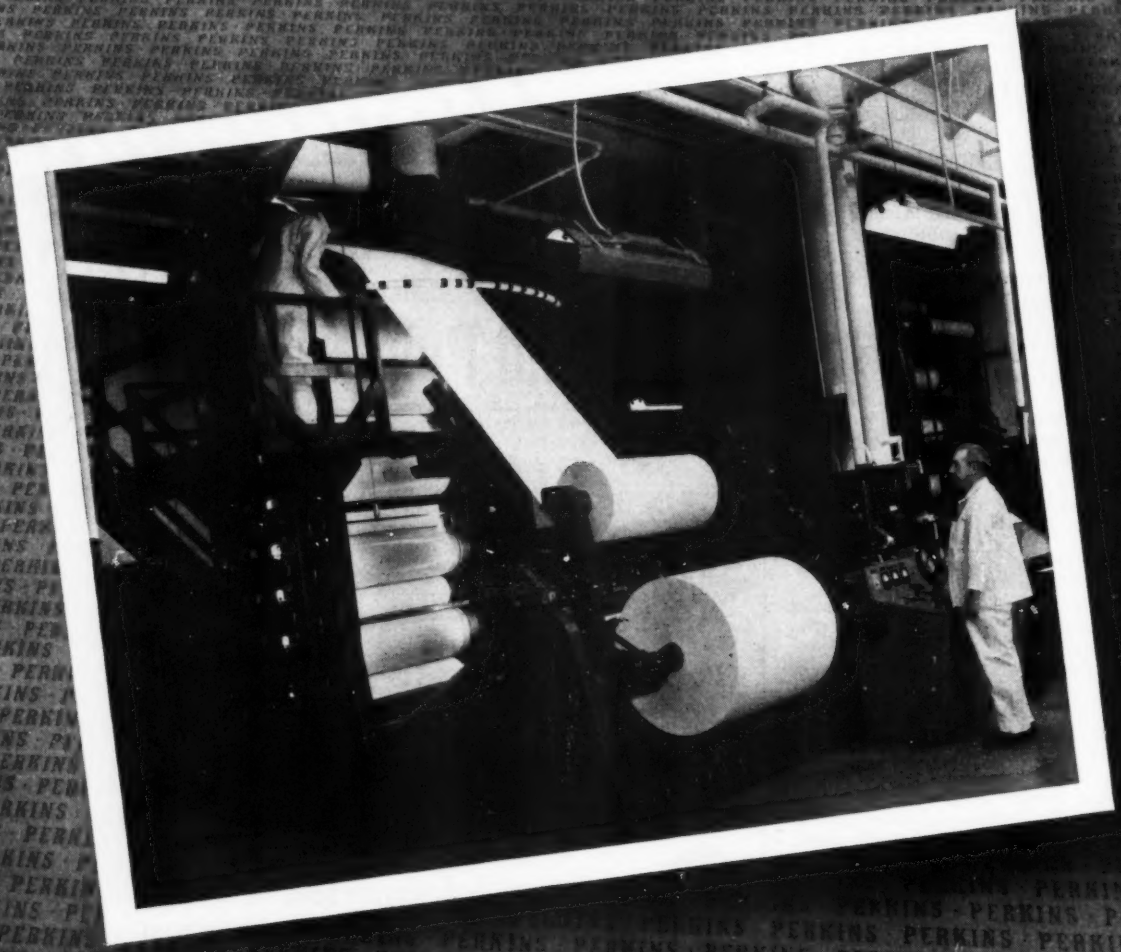

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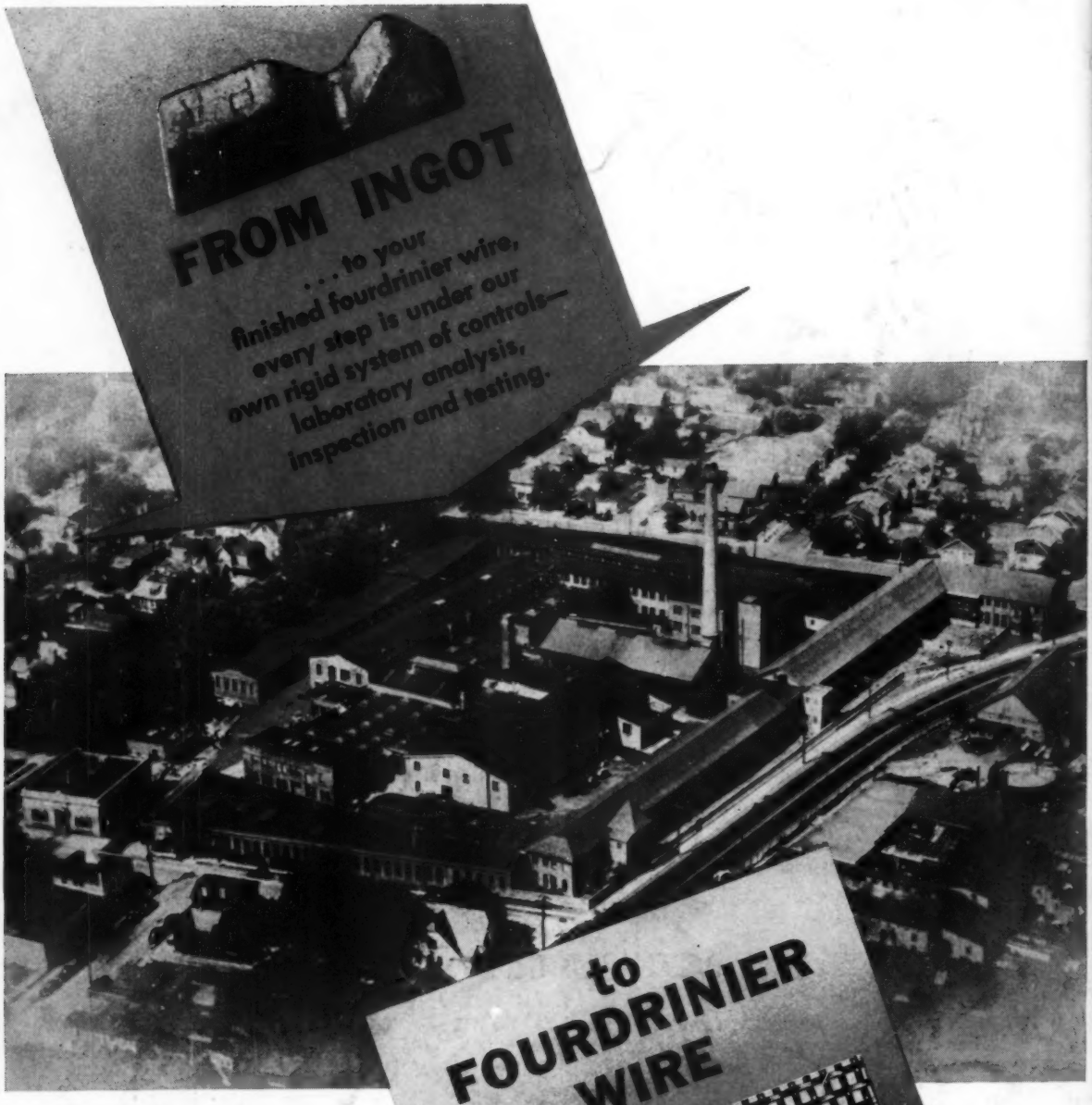
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